Thecus

N0204
N2200/PLUS/EVO
N4100EVO

User's Manual v2.7

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About This Manual

All information in this manual has been carefully verified to ensure its correctness. In case of an error, please provide us with your feedback. Thecus Technology Corporation reserves the right to modify the contents of this manual without notice.

Product name: Thecus N0204/N2200/N2200PLUS/N2200EVO/N4100EVO
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Limited Warranty

Thecus Technology Corporation guarantees all components of Thecus NAS products are thoroughly tested before they leave the factory and should function normally under general usage. In case of any system malfunctions, Thecus Technology Corporation and its local representatives and dealers are responsible for repair without cost to the customer if the product fails within the warranty period and under normal usage. Thecus Technology Corporation is not responsible for any damage or loss of data deemed to be caused by its products. It is highly recommended that users conduct necessary back-up practices.

Safety Warnings

For your safety, please read and follow the following safety warnings:

- Read this manual thoroughly before attempting to set up your Thecus IP storage.
- Your Thecus IP storage is a complicated electronic device. DO NOT attempt to repair it under any circumstances. In the case of malfunction, turn off the power immediately and have it repaired at a qualified service center. Contact your vendor for details.
- DO NOT allow anything to rest on the power cord and DO NOT place the power cord in an area where it can be stepped on. Carefully place connecting cables to avoid stepping or tripping on them.
- Your Thecus IP storage can operate normally under temperatures between 5°C and 40°C, with relative humidity of 20% – 85%. Using Thecus IP storage under extreme environmental conditions could damage the unit.
- Ensure that the Thecus IP storage is provided with the correct supply voltage (AC 100V ~ 240V). Plugging the Thecus IP storage to an incorrect power source could damage the unit.
- Do NOT expose Thecus IP storage to dampness, dust, or corrosive liquids.
- Do NOT place Thecus IP storage on any uneven surfaces.
- DO NOT place Thecus IP storage in direct sunlight or expose it to other heat sources.
- DO NOT use chemicals or aerosols to clean Thecus IP storage. Unplug the power cord and all connected cables before cleaning.
- DO NOT place any objects on the Thecus IP storage or obstruct its ventilation slots to avoid overheating the unit.
- Keep packaging out of the reach of children.
- If disposing of the device, please follow your local regulations for the safe disposal of electronic products to protect the environment.

Table of Contents

Copyright and Trademark Notice 2
About This Manual 2
Limited Warranty 2
Safety Warnings 3
Table of Contents 4
Chapter 1: Introduction 7
Overview 7
Product Highlights 7
Front Panel 9
Rear Panel 12
Chapter 2: Hardware Installation 19
Overview 19
Before You Begin 19
Hard Disk Installation 19
Cable Connections 21
Chapter 3: First Time Setup 27
Thecus Smart Utility (N0204/N2200) 27
Thecus Setup Wizard (N2200PLUS/EVO,N4100EVO) 31
LCD Operation 33
LCD Controls 33
Display Mode 33
USB Copy 34
Typical Setup Procedure 35
Chapter 4: System Administration 37
Overview 37
Web Administration Interface 37
My Favorite 38
Logout 40
Language Selection 40
System Information 41
Product Information 41
System/Service Status 41
Logs 42
System Management 43
Time: Setting system time 43
Notification configuration 44
Firmware Upgrade 44
Schedule Power On/Off (N0204/N2200/EVO,N4100EVO) 45
UPS Setting (Only for N2200) 46
Utility 47
System Network 50
WAN/LAN1 51
LAN2 (Only for N2200PLUS/N2200EVO/N4100EVO) 52
DHCP Server Configuration 52
Samba / CIFS 53
AFP (Apple Network Setup) 53
NFS Setup 54
FTP 54
HTTP/ Web Disk 55
UPnP 56

Nsync Target 56
Bonjour Setting 57
TFTP 57
DDNS 57
Storage Management 57
Disks Information 58
S.M.A.R.T. Information 59
Bad Block Scan 60
RAID Information 60
Create a RAID (Only for N2200PLUS/EVO,N4100EVO) 61
RAID Level 62
Edit RAID 63
Remove RAID 63
Space Allocation 64
iSCSI Target/USB Target 64
Share Folder 70
Adding Folders 70
Modify Folders 71
Remove Folders 71
NFS Share 72
Folder and Sub-Folder Access Control List (ACL) 73
ISO Mount 75
User and Group Authentication 77
Local User Configuration 78
Remove Users 79
Local Group Configuration 80
Add Groups 80
Edit Groups 81
Remove Groups 81
Batch Create Users and Groups 82
Application Server 82
Printer Information 83
Windows XP SP2 83
Windows Vista 84
iTunes® Server 87
Module Management 88
Module Installation 88
Auto Module Installation 88
System Module 89
Backup 90
Nsync 90
Chapter 5: Using Thecus IP Storage 93
Overview 93
Login Page 93
Using WebDisk(Does not apply to the N2200EVO/N4100EVO' WebDisk) **..... 94**
Photo Server(Does not apply to the N2200EVO/N4100EVO' photo server) **..... 96**
Windows XP Publishing Wizard 97
Managing Albums and Photos 102
Creating Albums 103
Password Protecting Albums 103
Uploading Pictures to Albums 103
EXIF Information 103
Slide Shows 104
Mapping a Client PC to the Thecus IP Storage 104
Windows 104
Apple OS X 105
Chapter 6: Tips and Tricks 106

USB Storage Expansion **106**
Replacing Damaged Hard Drives **106**
Hard Drive Damage 106
Replacing a Hard Drive 106
RAID Auto-Rebuild 107
Chapter 7: Troubleshooting **108**
Forgot My Network IP Address **108**
Resetting NAS IP Address and Admin Password (N2200/EVO/PLUS) **108**
Can't Map a Network Drive in Windows XP **108**
Restoring Factory Defaults **109**
Problems with Time and Date Settings **109**
Appendix A: Customer Support **110**
Appendix B: RAID Basics **111**
Overview **111**
Benefits **111**
Improved Performance 111
Data Security 111
RAID Levels **111**
Disk Usage **112**
Appendix C: Licensing Information **113**
Overview **113**
Source Code Availability **113**
CGIC License Terms **114**
GNU General Public License **114**

Chapter 1: Introduction

Overview

Thank you for choosing the Thecus IP Storage NAS Server. The Thecus IP storage is an easy-to-use storage server that allows a dedicated approach to storing and distributing data on a network. Data reliability is ensured with RAID features that provide data security and recovery. Gigabit Ethernet ports enhance network efficiency, allowing Thecus IP storage to take over file management functions, increase application and data sharing and provide faster data response. The Thecus IP storage offers data mobility with a disk roaming feature that lets you swap working hard drives for use in other Thecus IP storage, securing the continuity of data in the event of hardware failure. The Thecus IP storage allows data consolidation and sharing between Windows (SMB/CIFS), UNIX/Linux, and Apple OS X environments. The Thecus IP storage's user-friendly GUI supports multiple Languages.

Product Highlights

File Server

First and foremost, the Thecus IP storage allows you to store and share files over an IP network. With a Network Attached Storage (NAS) device, you can centralize your files and share them easily over your network. With the easy-to-use web-based interface, users on your network can access these files in a snap.

To learn about the Web User Interface, go to
Chapter 5: Using the Thecus IP Storage > Using WebDisk.

FTP Server

With the built-in FTP Server, friends, clients, and customers can upload and download files to your Thecus IP storage over the Internet with their favorite FTP programs. You can create user accounts so that only authorized users have access.

To set up the FTP Server, refer to
Chapter 4: System Network> FTP .

iTunes Server

With the built-in iTunes server capability, the Thecus IP storage enables digital music to be shared and played anywhere on the network!

To set up the iTunes Server, refer to
Chapter 4: Application Server>iTunes Configuration.

Backup Server

Don't leave precious data to chance. With advanced backup capabilities, you can easily upload mission critical files to the Thecus IP storage, and even automate your backup tasks for true peace-of-mind.

To find out how to backup your files with the Thecus IP storage, refer to
Chapter 4: Backup >Nsync.

Printer Server

With the Thecus IP storage's Printer Server, you can easily share an IPP printer with other PCs connected to your network.

To set up the Printer Server, refer to
Chapter 4: Application Server>Printer Information.

Superior Power Management (Only for N0204/N2200/EVO,N4100EVO)

Thecus IP storage supports schedule power on/off. With this feature, administrator can set at what time to turn on or off the system. This feature is a big plus for people who want to conserve energy. Wake-On-LAN enables administrator to remotely turn on the system without even leaving their own seat.

To schedule system on and off, refer to
Chapter 4: System Management> Scheduled Power On/Off

Front Panel

N0204:

The Thecus N0204 miniNAS's front panel has the USB copy button, indicators, and USB port:

Front Panel	
Item	**Description**
USB copy Button/LED	• Copy USB storage contents to N0204 miniNAS • **Blinking Green:** Copy activity • **Solid Green:** Copy Success • **Solid Red**: Copy Fail
HDD 1 LED	• **Solid Red:** HDD failed • **Blinking Green:** HDD activity
HDD 2 LED	• **Solid Red:** HDD failed • **Blinking Green:** HDD activity
LAN LED	• **Solid Green:** network link • **Blinking Orange:** network activity
Power LED	• **Solid Blue:** system is powered on
USB 2.0 Port	• USB 2.0 port for compatible USB devices, such as digital cameras, USB disks.

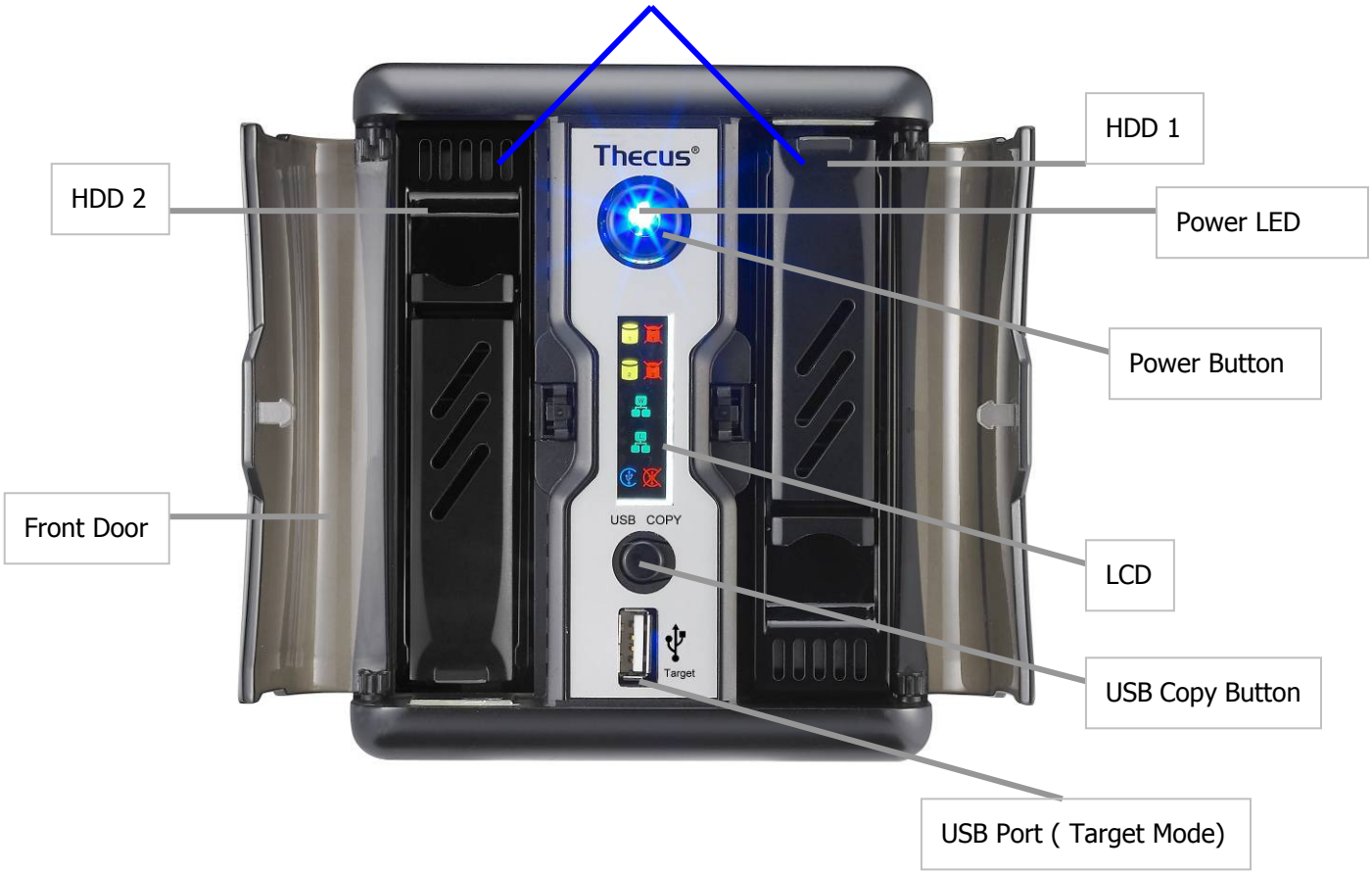
N2200:

The Thecus N2200's front panel has the device's controls, indicators, and hard disk trays:

Front Panel		
Item	**Description**	
Power LED	• **Solid blue:** system is ready • **Blinking Blue:** system is re-build	
Power Button	• Power on/off N2200	
LCD	• Displays current system status and messages	
	HDD 1 LED	• **Blinking Yellow:** HDD activity • **Blinking Red:** HDD failure
	HDD 2 LED	• **Blinking Yellow:** HDD activity • **Blinking Red:** HDD failure
	WAN LED	• **Blinking green:** network activity
	USB Copy	• **Blinking Blue:** USB Copy activity • **Blinking Red:** USB Copy failure
HDD Tray	• Two HDD trays support 2x 3.5" or 2 x 2.5" HDDs	
USB Copy Button	• Copy USB storage contents to N2200	
USB Port (Device Mode)	• USB 2.0 port for compatible USB devices, such as digital cameras, USB disks, USB printers.	

N2200PLUS:

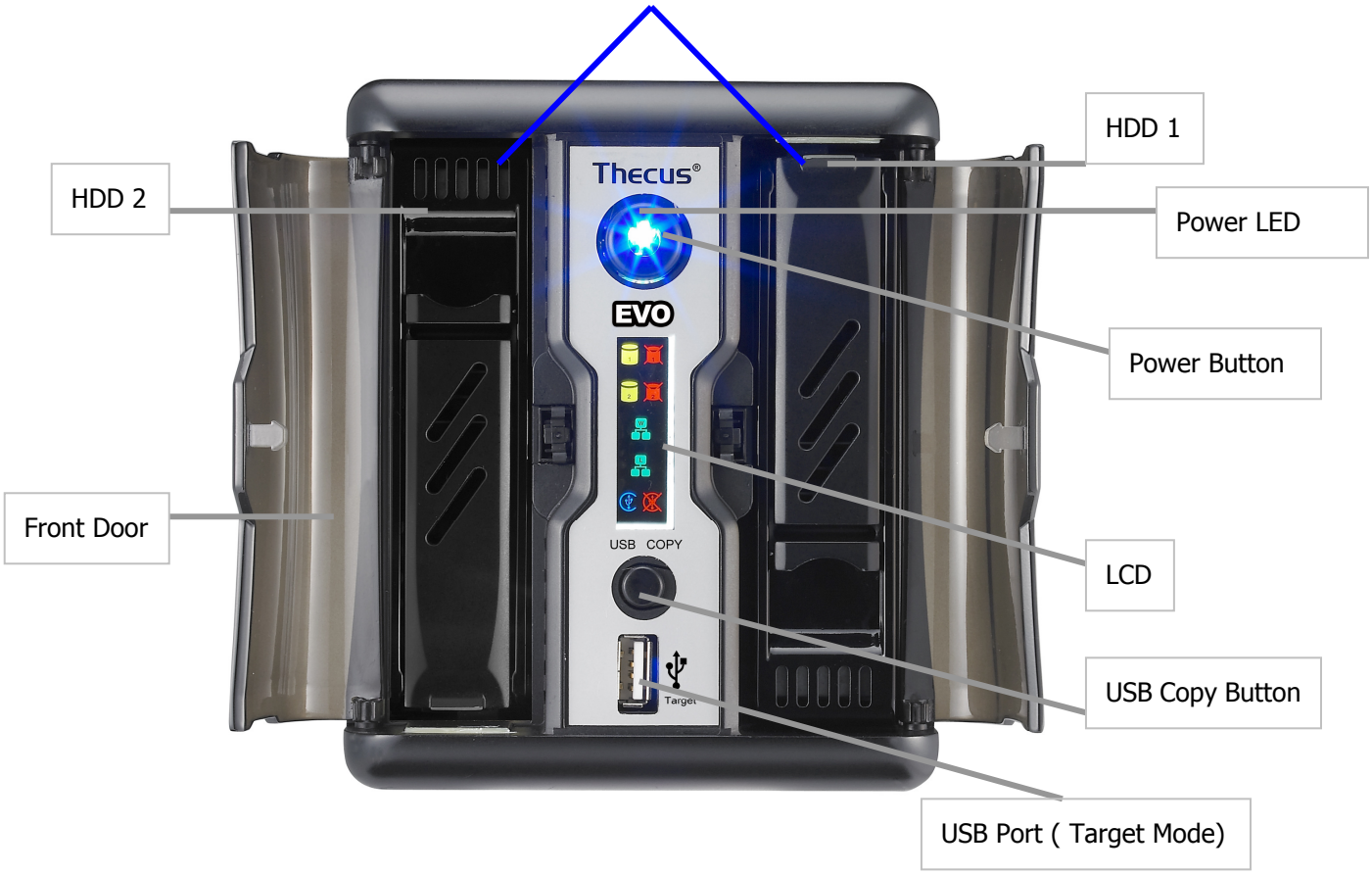
The Thecus N2200PLUS's front panel has the device's controls, indicators, and hard disk trays:



Front Panel		
Item	**Description**	
Power LED	• **Solid blue:** system is ready • **Blinking Blue:** system is re-build	
Power Button	• Power on/off N2200PLUS	
LCD	• Displays current system status and messages	
	HDD 1 LED	• **Blinking Yellow:** HDD activity • **Blinking Red:** HDD failure
	HDD 2 LED	• **Blinking Yellow:** HDD activity • **Blinking Red:** HDD failure
	WAN LED LAN LED	• **Blinking green:** network activity • **Blinking green:** network activity
	USB Copy	• **Blinking Blue:** USB Copy activity • **Blinking Red:** USB Copy failure
HDD Tray	• Two HDD trays support 2x 3.5" or 2 x 2.5" HDDs	
USB Copy Button	• Copy USB storage contents to N2200PLUS. (use rear USB port)	
USB Port (Target Mode)	• USB 2.0 port to connect to PC (Type **A** of target mode)	

N2200EVO:

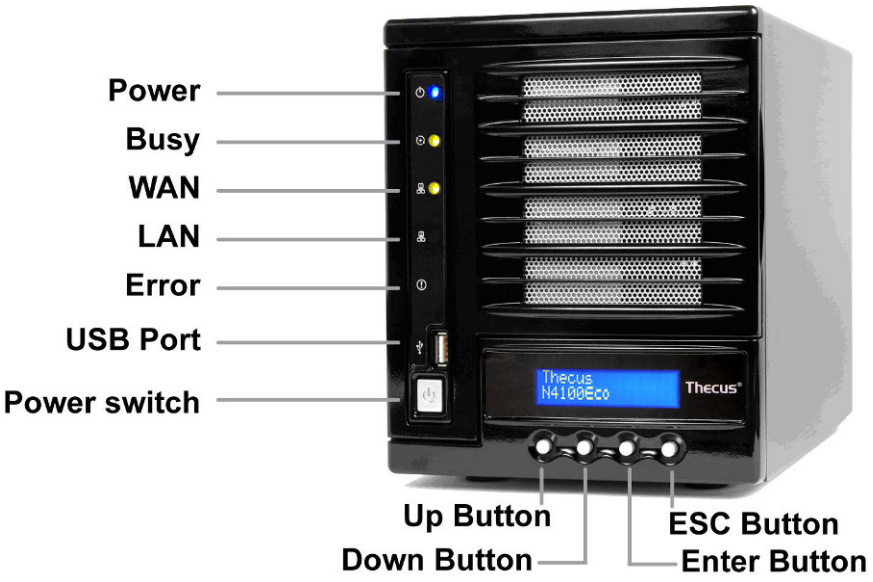
The Thecus N2200EVO's front panel has the device's controls, indicators, and hard disk trays:



Front Panel		
Item	**Description**	
Power LED	• **Solid blue:** system is ready • **Blinking Blue:** system is re-build	
Power Button	• Power on/off N2200EVO	
LCD	• Displays current system status and messages	
	HDD 1 LED	• **Blinking Yellow:** HDD activity • **Blinking Red:** HDD failure
	HDD 2 LED	• **Blinking Yellow:** HDD activity • **Blinking Red:** HDD failure
	WAN LED LAN LED	• **Blinking green:** network activity • **Blinking green:** network activity
	USB Copy	• **Blinking Blue:** USB Copy activity • **Blinking Red:** USB Copy failure
HDD Tray	• Two HDD trays support 2x 3.5" or 2 x 2.5" HDDs	
USB Copy Button	• Copy USB storage contents to N2200EVO. (use rear USB port)	
USB Port (Target Mode)	• USB 2.0 port to connect to PC (Type **A** of target mode)	

N4100EVO

The N4100EVO's front panel displays the unit's array of status LED's and is also where you'll find the power buttons. See the table below for a detailed explanation of each:

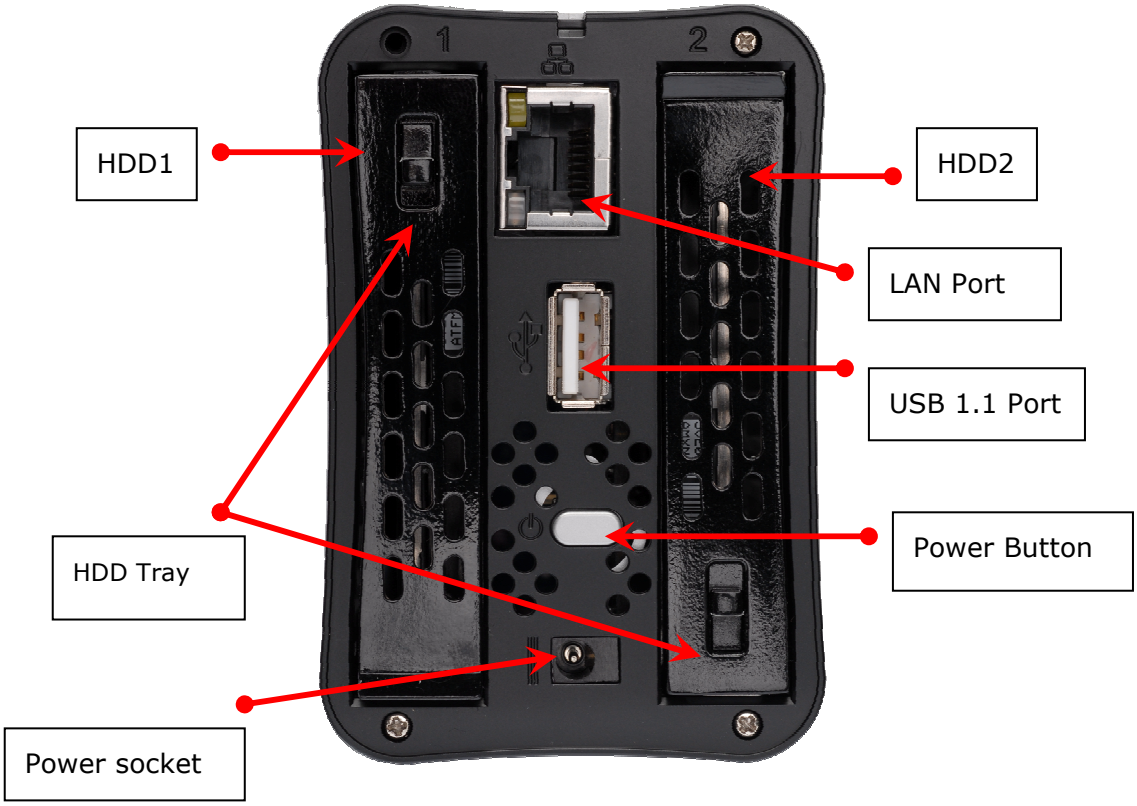


Item	Description
HDD Trays	• There are four hard disk drive (HDD) trays. Each tray supports a 3.5-inch SATA HDD. The trays have locks for added physical security and keys are provided with the package.
Power LED	• **Solid blue:** N4100EVO is powered on
Busy LED	• **Blinking orange:** system startup or maintenance; data inaccessible • **Off:** system startup complete; system operating normally
WAN LED	• **Solid green:** network link • **Blinking green:** network activity
LAN LED	• **Solid green:** network link • **Blinking green:** network activity
Error LED	• **Solid red:** system error detected
Power Button	• Power on/off N4100EVO

Rear Panel

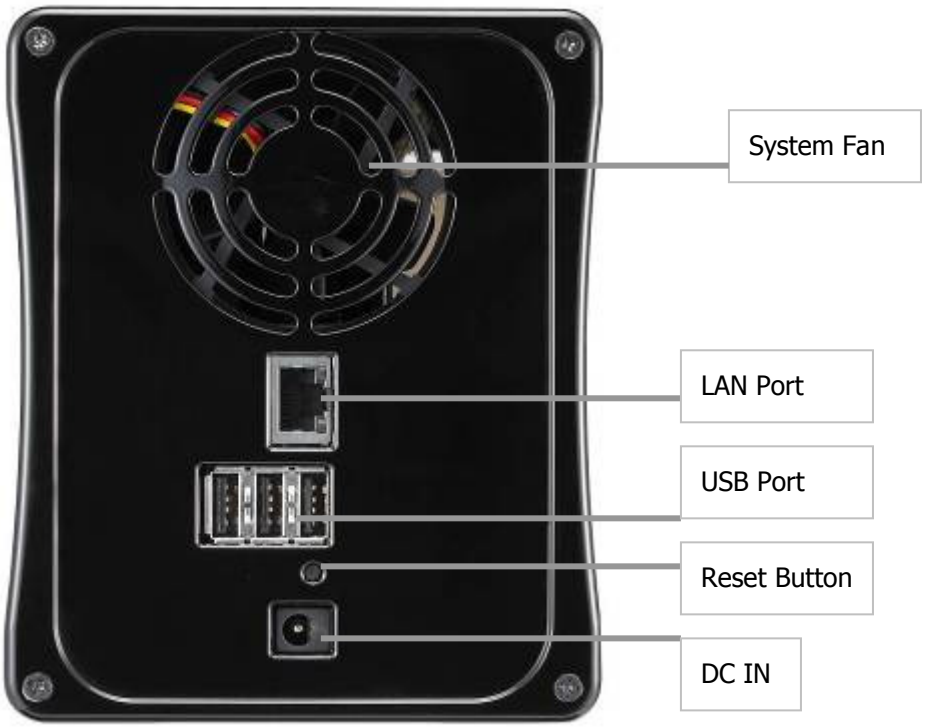
N0204:

The Thecus N0204 miniNAS's rear panel features ports and connectors.



N2200:

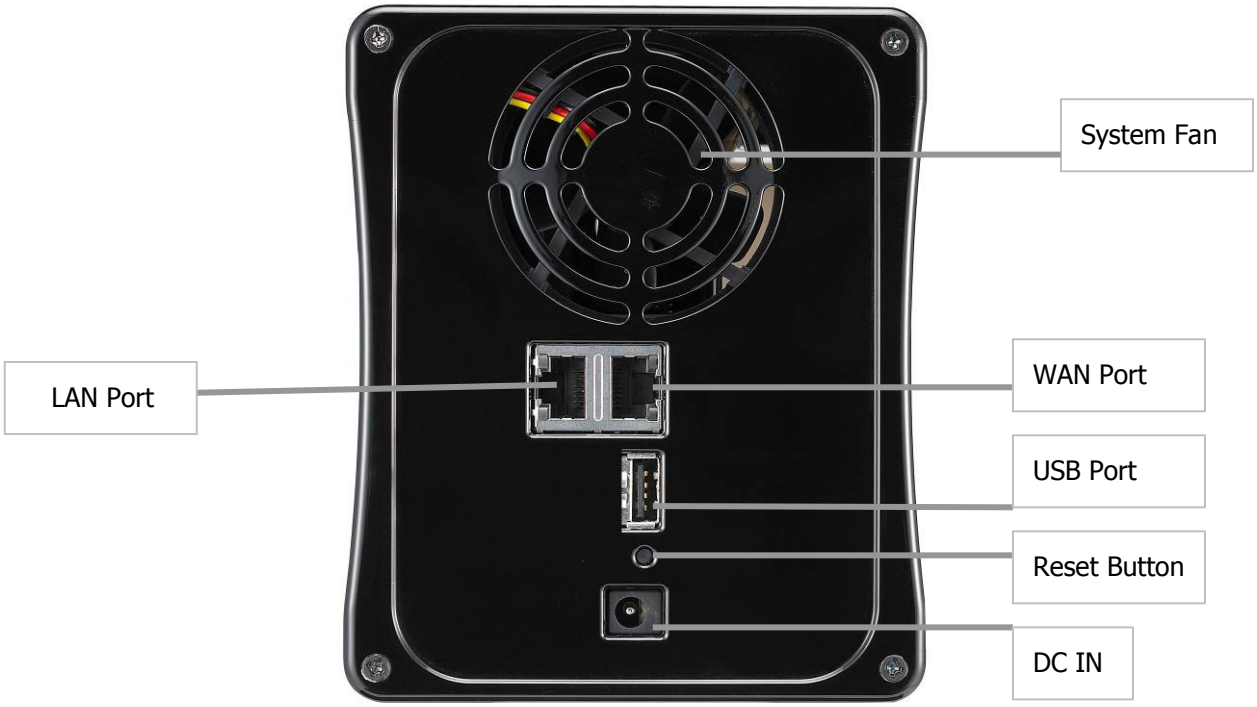
The N2200 rear panel features ports and connectors.



Back Panel	
Item	**Description**
System Fan	• System fan that exhausts heat from the unit
LAN Port	• LAN port for connecting to an Ethernet network through a switch or router
Reset Button	• Resets the N2200 • Immediately press the Reset button on the back. This will reset your network setting, password.
USB Port	• USB 2.0 port for compatible USB devices, such as digital cameras, USB disks, and USB printers
DC IN	• For connect the power adaptor

N2200PLUS:

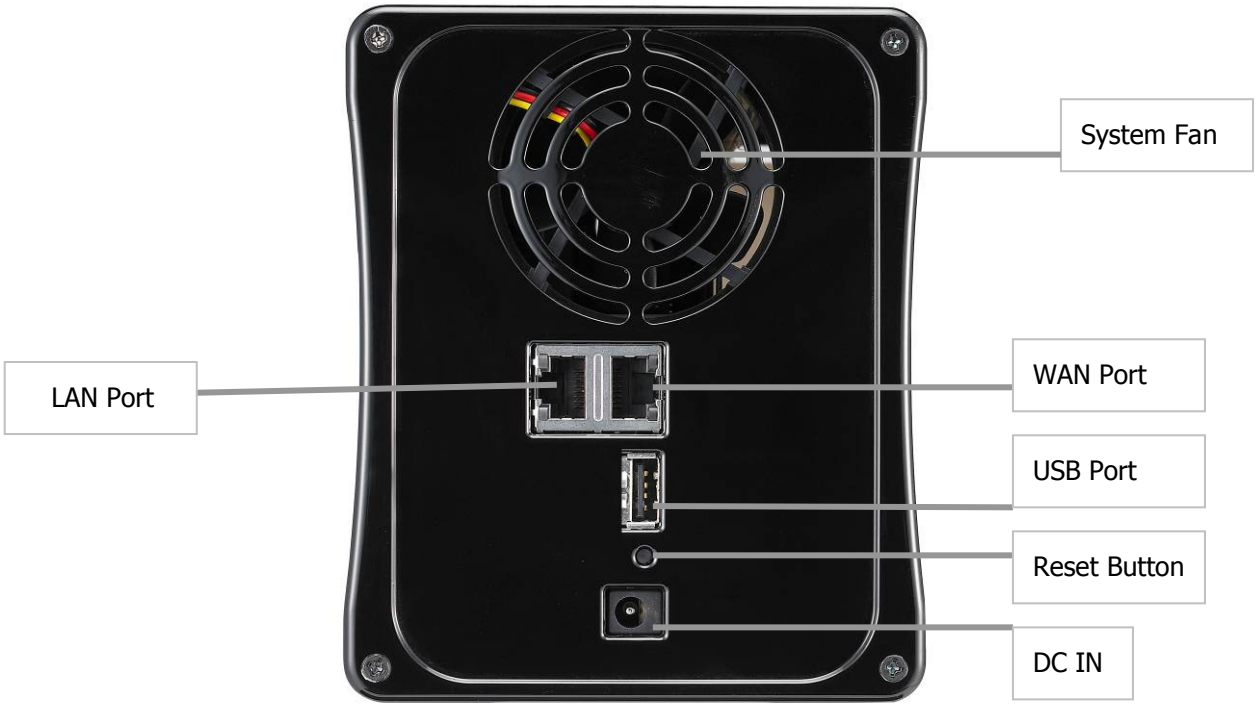
The N2200PLUS rear panel features ports and connectors.



Back Panel	
Item	**Description**
System Fan	• System fan that exhausts heat from the unit
WAN Port	• WAN port for connecting to an Ethernet network through a switch or router
LAN Port	• LAN port for connecting to an Ethernet network through a switch or router
Reset Button	• Resets the N2200PLUS • Immediately press the Reset button on the back. This will reset your network setting, password.
USB Port	• USB 2.0 port for compatible USB devices, such as digital cameras, USB disks, and USB printers.
DC IN	• For connect the power adaptor

N2200EVO:

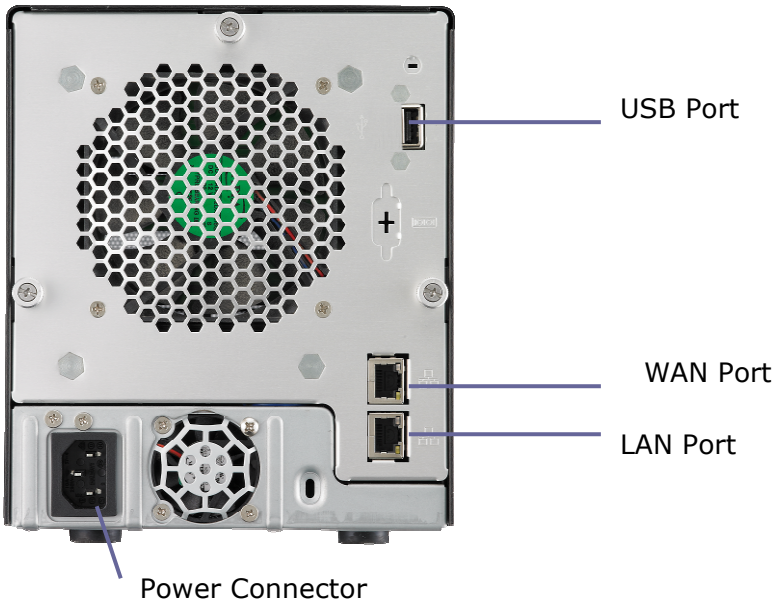
The N2200EVO rear panel features ports and connectors.



Back Panel	
Item	**Description**
System Fan	• System fan that exhausts heat from the unit
WAN Port	• WAN port for connecting to an Ethernet network through a switch or router
LAN Port	• LAN port for connecting to an Ethernet network through a switch or router
Reset Button	• Resets the N2200EVO • Immediately press the Reset button on the back. This will reset your network setting, password.
USB Port	• USB 2.0 port for compatible USB devices, such as digital cameras, USB disks, and USB printers.
DC IN	• For connect the power adaptor

N4100EVO

The rear panel of the N4100EVO houses the USB and Ethernet connections, as well as the power connector. See the table below for descriptions of each:



Item	Description
Power Connector	• Connect the included power cord to this connector
WAN Port	• WAN port for connecting to an Ethernet network through a switch or router
LAN Port	• LAN port for connecting to an Ethernet network through a switch or router
USB Ports	• USB 2.0 ports for storage expansion

Chapter 2: Hardware Installation

Overview

Your Thecus IP storage is designed for easy installation. To help you get started, the following chapter will help you quickly get your Thecus IP storage up and running. Please read it carefully to prevent damaging your unit during installation.

Before You Begin

Before you begin, be sure to take the following precautions:

1. Read and understand the ***Safety Warnings*** outlined in the beginning of the manual.

2. If possible, wear an anti-static wrist strap during installation to prevent static discharge from damaging the sensitive electronic components on the IP storage.

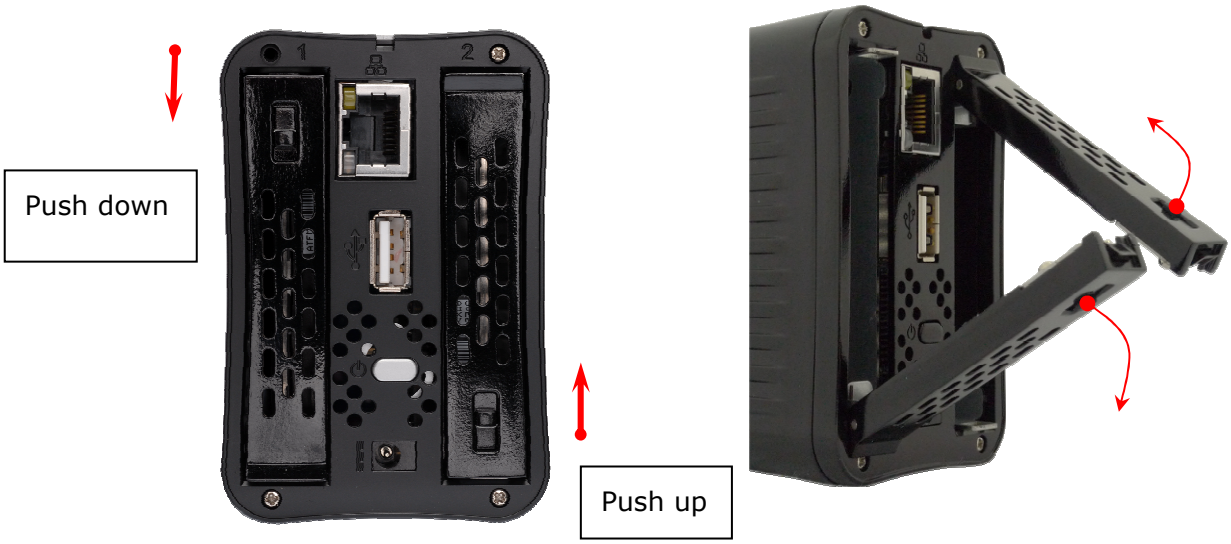
3. Be careful not to use magnetized screwdrivers around the Thecus IP storage's electronic components.

Hard Disk Installation

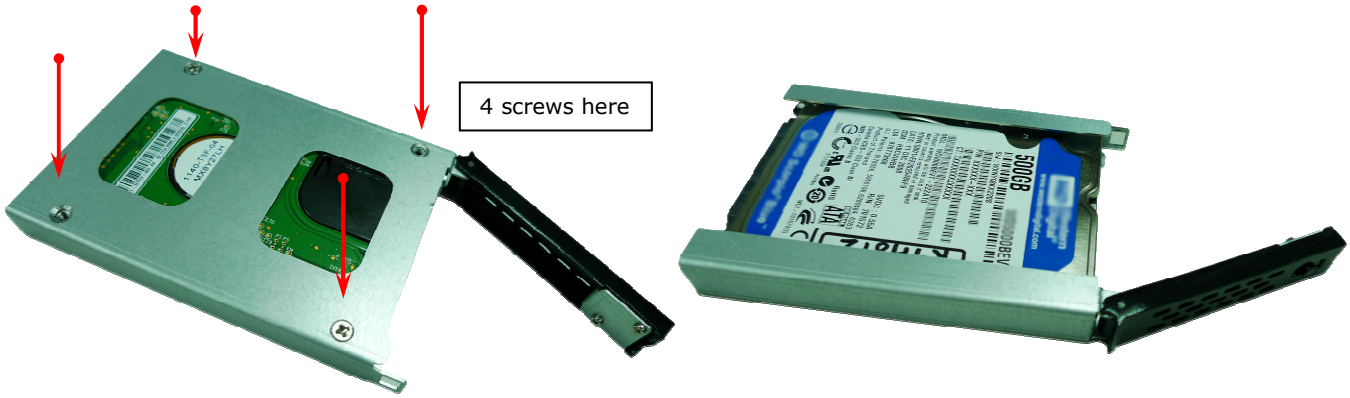
N0204:

The N0204 miniNAS supports two standard 2.5" Serial ATA (SATA) hard disks. To install a hard disk into the N0204 miniNAS, follow the steps below:

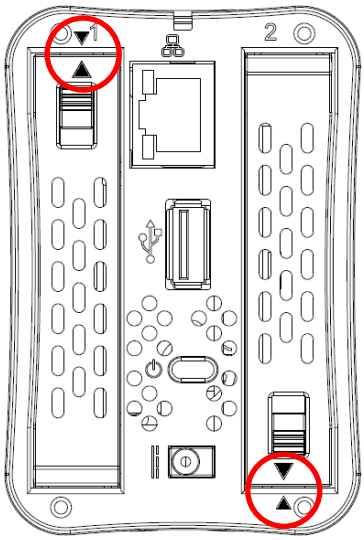
1. Open 2.5" HDD tray from N0204 miniNAS, as the following chart.



2. Install HDD on the tray, as the following chart:



3. Install the tray with HDD into N0204 miniNAS, please note that the HDD-1 is in left side and HDD-2 is in right side. The triangular symbol of tray must be corresponding with the triangular symbol of back panel. Push the tray back.



N2200/PLUS/EVO:

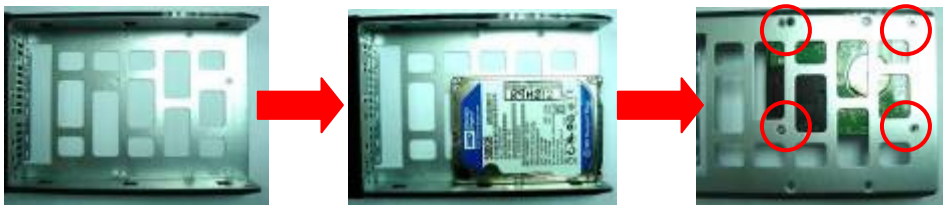
The N2200/PLUS/EVO supports both 2.5" and 3.5" Serial ATA (SATA) hard disks. To install a hard disk into the N2200/PLUS/EVO, follow the steps below:

1. Open front cover of the N2200/PLUS/EVO.

2. For 3.5" HDDs
   a. Remove an HDD tray and install a 3.5" SATA hard disk onto it.

b. Slide the HDD tray back into the N2200/N2200PLUS until it snaps into place.

3. For 2.5” HDDs
   c. Remove an HDD tray and install a 2.5” SATA hard disk onto it.
   d. Slide the HDD tray back into the N2200/PLUS/EVO until it snaps into place.



Cable Connections

N0204:

To connect the N0204 miniNAS to your network, follow the steps below:

1. Connect an Ethernet cable from your network to the **LAN port** on the back panel of the N0204 miniNAS.

2. Connect the provided power adaptor into the **power socket** on the back panel. Plug the other end of the cord into a surge protector socket.

3. Press the **Power button** on the Rear end to boot up or shut down the N0204 miniNAS.

NOTE

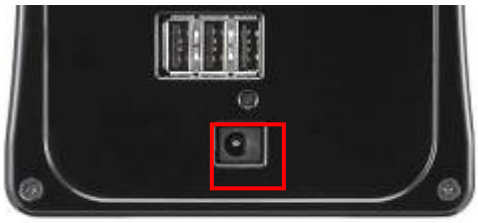
1. USB copy LED will be flashed Blue light during the system are booting and will be dull after the booting complete.
2. To shut down the system, press the power button over 4 seconds, then USB copy LED will be flashed Red light, release power button.

N2200:

To connect the N2200 to your network, follow the steps below:

1. Connect an Ethernet cable from your network to the LAN port on the back panel of the N2200.

2. Connect the provided power cord into the power socket on the back panel.



3. Press the power button boot up the N2200.

N2200PLUS:

To connect the N2200PLUS to your network, follow the steps below:

1. Connect an Ethernet cable from your network to the WAN port on the back panel of the N2200PLUS.

2. Connect the provided power cord into the power socket on the back panel.

3. Press the power button boot up the N2200PLUS.

N2200EVO:

To connect the N2200EVO to your network, follow the steps below:

1. Connect an Ethernet cable from your network to the WAN port on the back panel of the N2200EVO.

3. Connect the provided power cord into the power socket on the back panel.

3. Press the power button boot up the N2200EVO.

N4100EVO:

The N4100EVO supports four standard 3.5" or 2.5" Serial ATA (SATA) hard disks. To install a hard disk into the N4100EVO, follow the steps below:

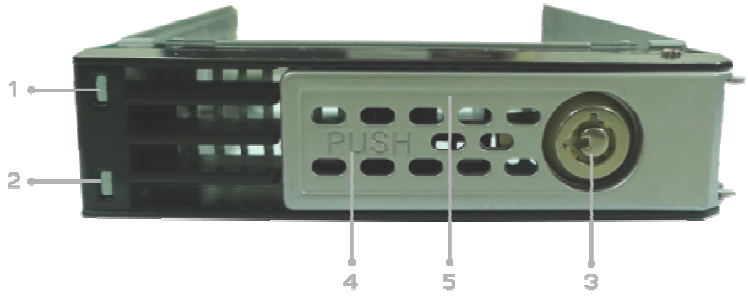
1. Remove a hard disk tray from the N4100EVO.
2. Slide the new SATA hard disk into the tray and fasten the screws.
3. Insert the hard disk and tray back into the N4100EVO until it snaps into place and lock it with a key if desired.
4. The LED blinks green when the hard disk is plugged in.

NOTE

If your HDD was part of a RAID 1 or RAID 5 array previously, it automatically rebuilds. If you replace all the drives with higher capacity drives, you will need to go to Administrator login and format the drives.

Hard Disk Trays

Each of above mentioned models' hard disk trays has a lock, a latch, and two LED indicators:



Hard Disk Trays	
Item	**Description**
1.HDD Power LED	• **Solid blue:** Hard disk is powered on
2.HDD Access/Error LED	• **Solid green:**When the HDD is plugged in. • **Blinking green:** System is accessing data on the hard disk • **Solid red:** HDD fail
3.Lock	• Use the lock to physically secure the hard disk to the unit.
4.Latch	• Use to open and remove or close and secure the tray.
5.Handle	• Pull to remove the HDD tray.

NOTE

After turning on the NAS, the light "activity" will become bright while the HDD is plugged in, and will glitter while reading or writing information.

Cable Connections

Make the following connections on the Thecus N4100EVO and then power up the unit:

1. Connect an Ethernet cable from your network to the WAN port on the back panel of the N4100EVO.

2. Connect the provided power cord into the universal power socket on the back panel. Plug the other end of the cord into a surge protected socket.

3. Press the power button on the front panel to power on the N4100EVO.

Checking System Status

After making connections on the N4100EVO and powering up, check whether the system status is normal or has trouble by observing indicators on the front panel and hard disk trays.

System Status Normal

The system status is normal if:

1. The front panel Power LED glows blue and the WAN LED glows or blinks green.
2. The HDD Power LED on each HDD tray glows blue.

Chapter 3: First Time Setup

Once the hardware is installed, physically connected to your network, and powered on, you can configure the Thecus IP storage so that it is accessible to your network users. There is one way to set up your Thecus IP storage: using the **Thecus Smart Utility**(N2200/N0204) **/Thecus Setup Wizard**(N2200Plus/EVO,N4100EVO). Follow the steps below for initial software setup.

*Thecus Smart Utility (*N0204/N2200)

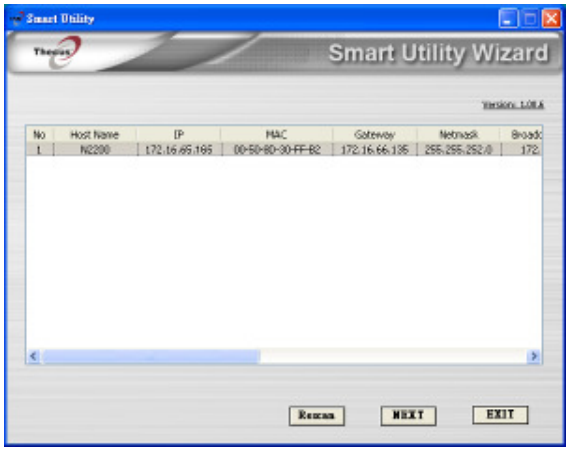
The handy Thecus Smart Utility makes configuring N0204/N2200 a snap. To configure the Thecus IP storage using the Smart Utility, perform the following steps:

1. Insert the installation CD into your CD-ROM drive (the host PC must be connected to the network).

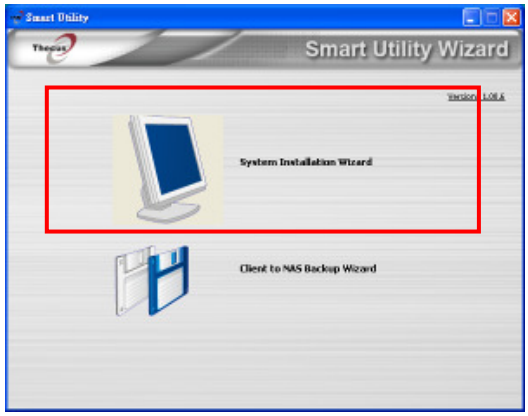
2. The Smart Utility should launch automatically. If not, please browse your CD-ROM drive and double click on **autorun.exe.** Click "**N0204/N2200** ".

NOTE For MAC OS X users, double click on **Thecus Smart Utility Wizard .pkg** file.

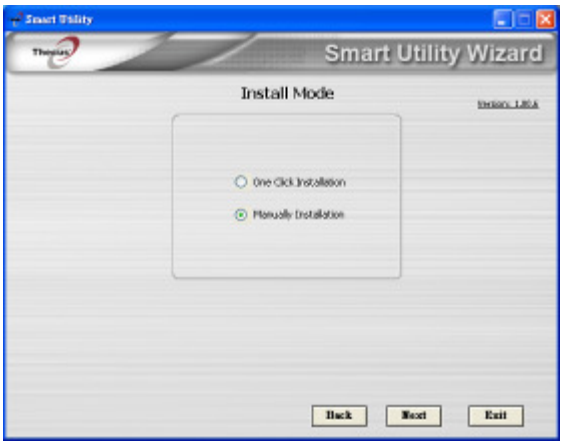
3. Select the N0204/N2200 that you like to configure. Press Next to continue.



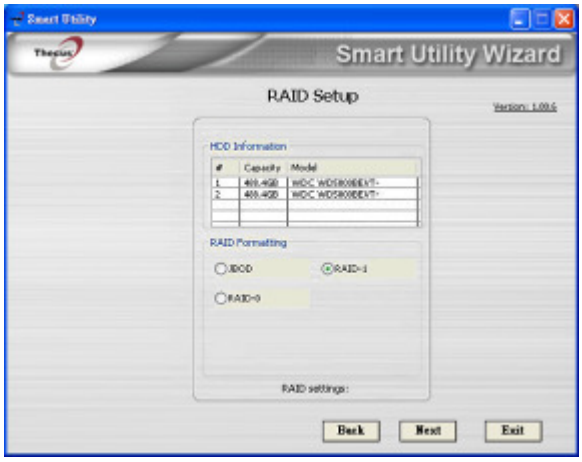
4. First, please select System Installation Wizard.



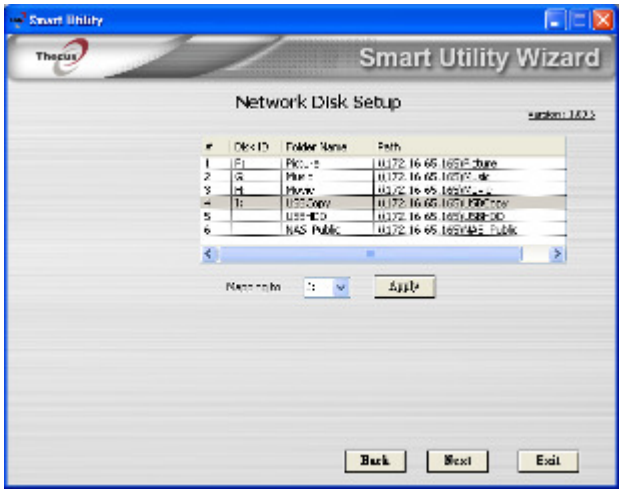
5. Please select your installation mode, **One Click Installation or Manual Installation**.



6. After your installed HDDs are detected, select your desired RAID level. Press **Next** to continue.

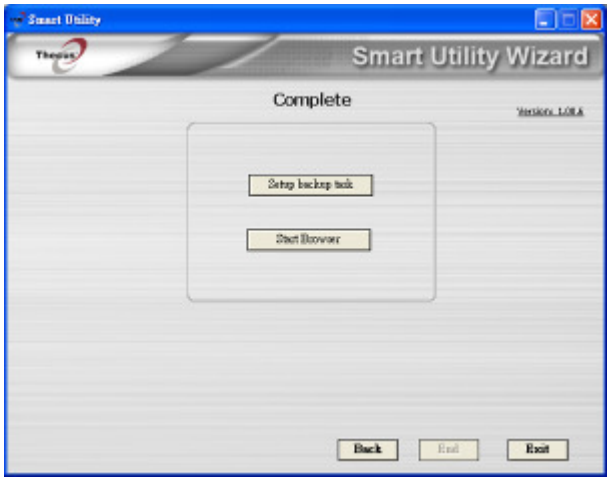


7. The N0204/N2200 will automatically create several folders. Select your desired folder and map it to your local PC/NB as a Network Device.

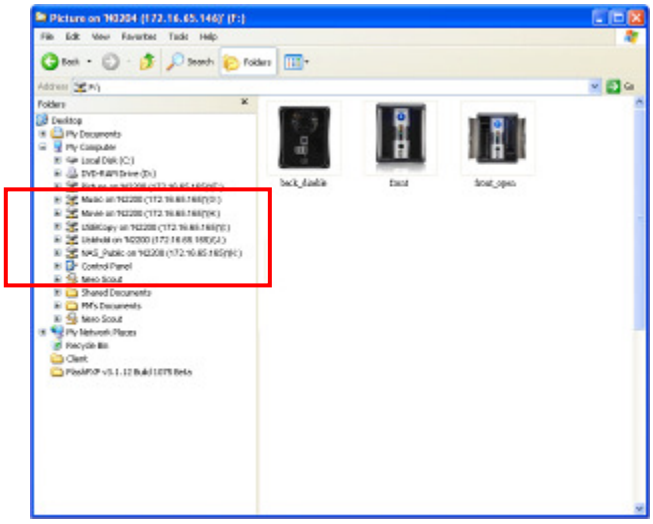


8. Complete the N0204/N2200 Smart Utility Wizard.

A. You can access the N0204/N2200 Web Administrator interface by clicking the **Start Brower** button. The default password is "**admin**". You can also setup a backup task at this point by clicking the **Setup backup task** button.



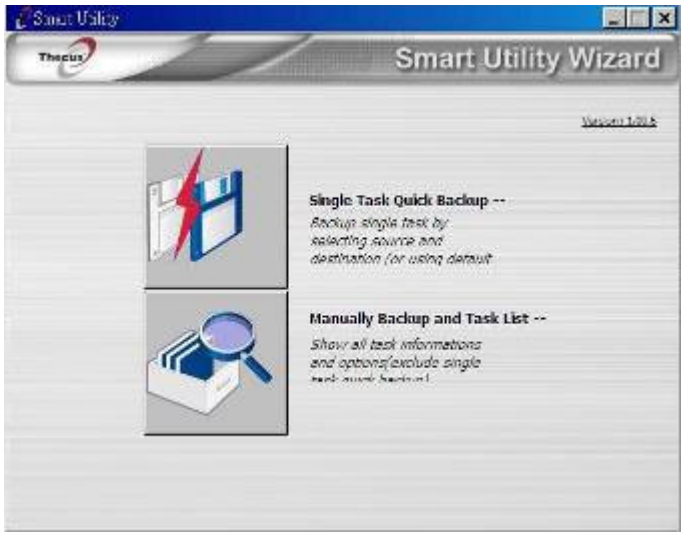
B. Press **Exit** to exit the windows utility.



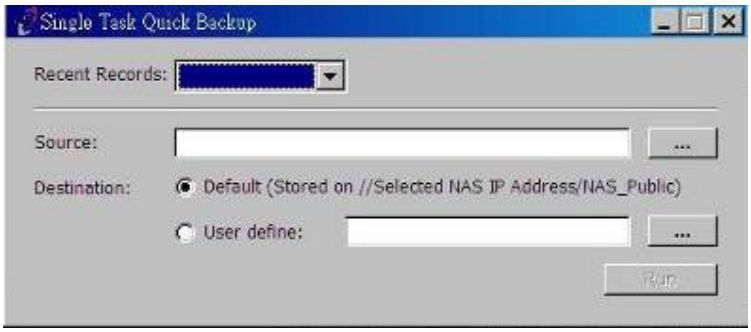
NOTE

The Thecus Smart Utility Wizard is designed for installation on systems running Windows XP/2000/7 or Mac OSX or later. Users with other operating systems will need to install the Thecus Smart Utility Wizard on a host machine with one of these operating systems before using the unit.

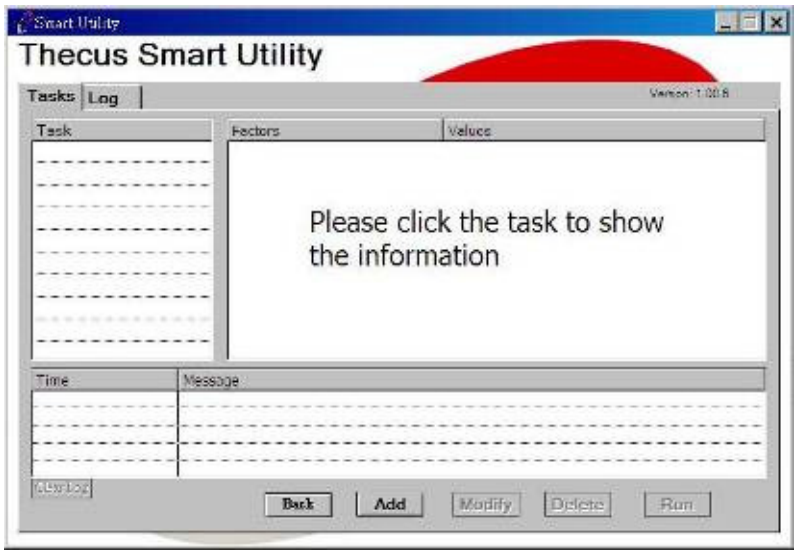
C. Press the **Setup backup task** button to configure backup tasks on your N0204/N2200.



· **Single Task Quick Backup:** Perform a single backup by selecting the source and destination.



· **Manually Backup and Task List:** Show all task information and options.



Thecus Setup Wizard (N2200PLUS/EVO,N4100EVO)

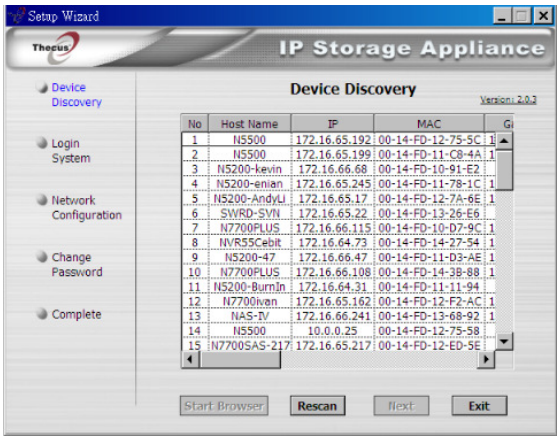
The handy Thecus Setup Wizard makes configuring N2200PLUS/EVO,N4100EVO a snap. To configure the N2200PLUS/EVO,N4100EVO using the Setup Wizard, perform the following steps:

1. Insert the installation CD into your CD-ROM drive (the host PC must be connected to the network).

2. The Setup Wizard should launch automatically. If not, please browse your CD-ROM drive and double click on **Setup.exe.**

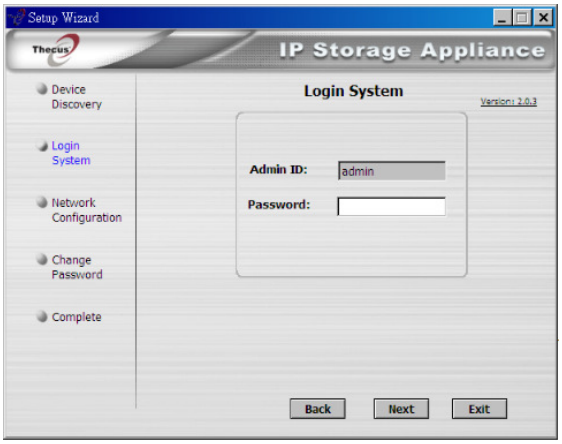
NOTE For MAC OS X users, double click on Thecus Setup Wizard .dmg file.

3. The Setup Wizard will start and automatically detect all Thecus storage devices on your network. If none are found, please check your connection and refer to **Chapter 7: Troubleshooting** for assistance.

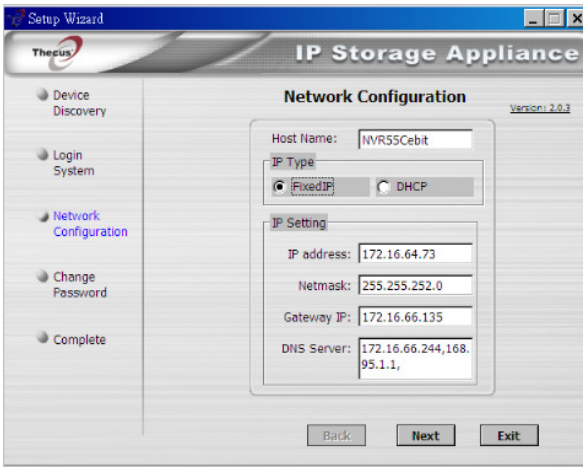


4. Select the N2200PLUS/EVO,N4100EVO that you like to configure.

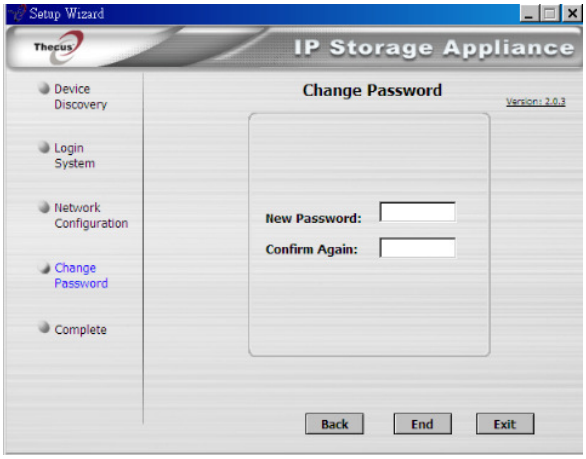
5. Login with the administrator account and password. The default account and password are both "`admin`".



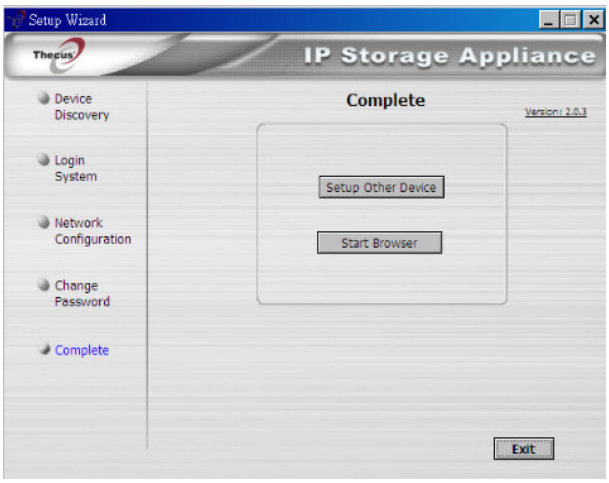
6. Name your N2200PLUS/EVO,N41OOEVO and configure the network IP address. If your switch or router is configured as a DHCP Server, configuring the N2200PLUS/EVO,N4100EVO to automatically obtain an IP address is recommended. You may also use a static IP address and enter the DNS Server address manually.



7. Change the default administrator password.



8. Finished! Access the N2200PLUS/EVO,N4100EVO Web Administrator Interface by pressing the ***Start Browser*** button. You can also configure another N2200PLUS/EVO,N4100EVO at this point by clicking the ***Setup Other Device*** button. Press ***Exit*** to exit the wizard.



NOTE

The Thecus Setup Wizard is designed for installation on systems running Windows XP/2000/vista/7 or Mac OSX or later. Users with other operating systems will need to install the Thecus Setup Wizard on a host machine with one of these operating systems before using the unit.

LCD Operation

The N4100EVO is equipped with an LCD on the front for easy status display and setup. There are four buttons on the front panel to control the LCD functions.

LCD Controls

Use the **Down** (▼), **Up** (▲), **Enter** (↵) and **Escape** (**ESC**) keys to operate LCD to view system information and USB copy.

The following table illustrates the keys on the front control panel:

LCD Controls		
Icon	**Function**	**Description**
▲	Up Button	Select the previous configuration settings information.
▼	Down Button	Select the next configuration settings information
↵	Enter	Enter for the USB copy confirmation message.
ESC	Escape	Escape and return to the previous menu.

There are two modes of operation for the LCD: **Display Mode** and **Management Mode**.

Display Mode

During normal operation, the LCD will be in **Display Mode**.

Display Mode	
Item	**Description**
Host Name	Current host name of the system.
WAN	Current WAN IP setting.
LAN	Current LAN IP setting.
Disk Info	Current status of disk slot has been installed
RAID	Current RAID status.
System Fan	Current system fan status.
2006/06/16 12:00	Current system time.

The N4100 Eco will rotate these messages every one-two seconds on the LCD display.

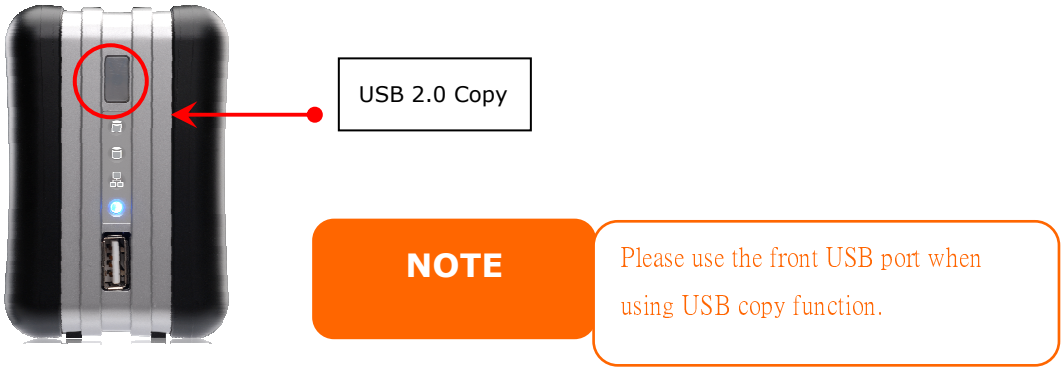
USB Copy

The USB Copy function enables you to copy files stored on USB devices such as USB disks and digital cameras to the Thecus IP storage by press USB copy button. To use USB copy, follow the steps below:

N0204:

1. Plug your USB device into USB2.0 port on the Front Panel.

2. Press USB copy Button and the N0204 miniNAS will start copying USB disks connected to the front end USB2.0 port.



3. The USB LED show
   - **Blinking Green:** Copy activity.
   - **Solid Green:** Copy Success.
   - **Solid Red:** Copy Fail.

N2200:

1. Plug your USB device into an available USB port on the Front Panel.
2. Press the "**USB Copy Button".**
3. The N2200 will start copying USB disks connected to the front USB port. The LCD will display the USB copy progress and result.

N2200PLUS/EVO:

1. Plug your USB device into an available USB port on the Rear Panel.
2. Press the "**USB Copy Button".**
3. The N2200PLUS will start copying USB disks connected to the rear USB port. The LCD will display the USB copy progress and result.

N4100EVO:

The USB Copy function enables you to copy files stored on USB devices such as USB disks and digital cameras to the N4100EVO with a press of a button. To use USB copy, follow the steps below:

1. Plug your USB device into an available USB port on the Front Panel.
2. In **Display Mode**, press the **Enter** (↵).
3. The LCD will display "**USB Copy?**"
4. Press **Enter** (↵) and the N4100EVO will start copying USB disks connected to the front USB port.
5. All of data will be copied into system folder named "USBcopy".

Typical Setup Procedure

From the Web Administration Interface, you can begin to setup your Thecus IP storage for use on your network. Setting up the Thecus IP storage typically follows the five steps outlined below.

For more on how to use the Web Administration Interface, see
Chapter 4: Web Administration Interface.

Step 1: Network Setup

From the Web Administration Interface, you can configure the network settings of the Thecus IP storage for your network. You can access the **Network** menu from the menu bar.
For details on how to configure your network settings, refer to
Chapter 4: System Network .

Step 2: RAID Creation

Next, administrators can configure their preferred RAID setting and build their RAID volume. You can access RAID settings from the menu bar of the Web Administration Interface by navigating to **Storage Management > RAID Configuration.**

For more information on configuring RAID, see
Chapter 4: System Management > RAID Configuration.

Don't know which RAID level to use? Find out more about the different RAID levels from **Appendix B: RAID Basics**.

Step 3: Create Local Users or Setup Authentication

Once the RAID is ready, you can begin to create local users for the IP STORAGE, or choose to setup authentication protocols such as Active Directory (AD).

For more on managing users, go to **Chapter 4:User and Group Authentication**.

Step 4: Create Folders and Set Up ACLs

Once users are introduced into your network, you can begin to create various folders on the Thecus IP storage and control user access to each using Folder Access Control Lists.

More information on managing folders, see
Chapter 4: Storage Management > Share Folder .

To find out about configuring Folder Access Control Lists, see **Chapter 4: Storage Management > Share Folder> Folder Access Control List (ACL)**.

Step 5: Start Services

Finally, you can start to setup the different services of the IP Storage for the users on your network. You can find out more about each of these services by clicking below:

SMB/CIFS

Apple File Protocol (AFP)

Network File System (NFS)

File Transfer Protocol (FTP)

iTunes Server

Printer Server

Chapter 4: System Administration

Overview

The Thecus IP storage provides an easily accessible **Web Administration Interface**. With it, you can configure and monitor the Thecus IP storage anywhere on the network.

Web Administration Interface

Make sure your network is connected to the Internet. To access Thecus IP storage **Web Administration Interface**:

1. Type the Thecus IP storage IP address into your browser. (Default IP address is `http://192.168.1.100`) (N0204/N2200 default IP address is DHCP)

NOTE

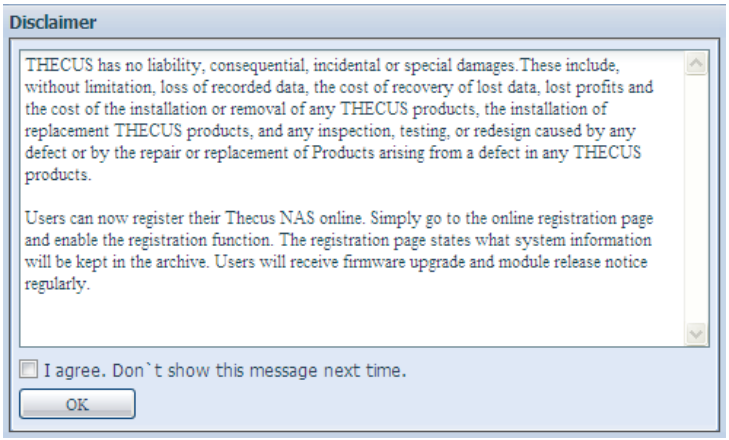
Your computer's network IP address must be on the same subnet as the Thecus IP storage. If the Thecus IP storage has default IP address of 192.168.1.100, your managing PC IP address must be 192.168.1.x, where x is a number between 1 and 254, but not *100*.

2. Login to the system using the administrator user name and password. The factory defaults are:

   User Name: `admin`
   Password: `admin`

※ If you changed your password in the smart utility/setup wizard, use the new password.

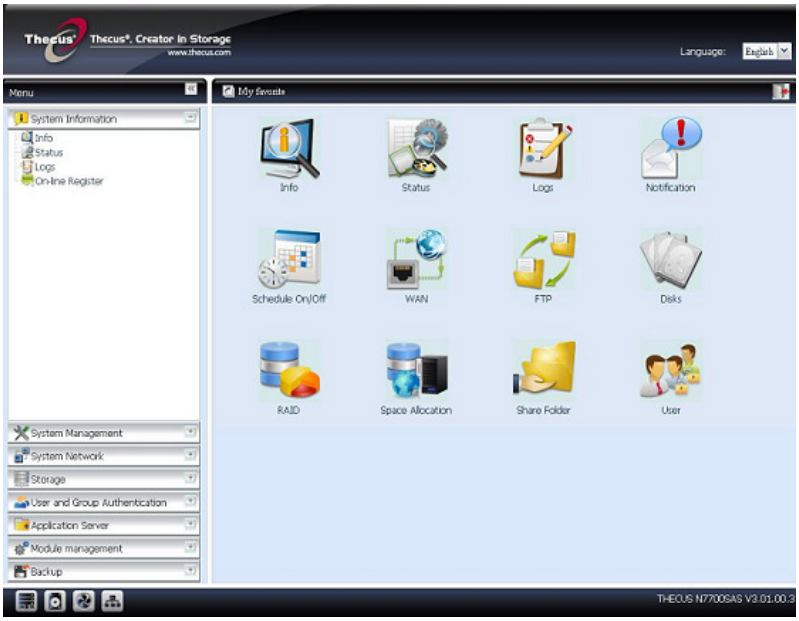
Once you are logged in as an administrator disclaimer page will appear as below. Please click the check box if you do not want to have this page displayed during the next login.


Disclaimer
THECUS has no liability, consequential, incidental or special damages. These include, without limitation, loss of recorded data, the cost of recovery of lost data, lost profits and the cost of the installation or removal of any THECUS products, the installation of replacement THECUS products, and any inspection, testing, or redesign caused by any defect or by the repair or replacement of Products arising from a defect in any THECUS products.
Users can now register their Thecus NAS online. Simply go to the online registration page and enable the registration function. The registration page states what system information will be kept in the archive. Users will receive firmware upgrade and module release notice regularly.
I agree. Don`t show this message next time.
OK

Following by disclaim page, you will see the **Web Administration Interface**. From here, you can configure and monitor virtually every aspect of the Thecus IP storage from anywhere on the network.

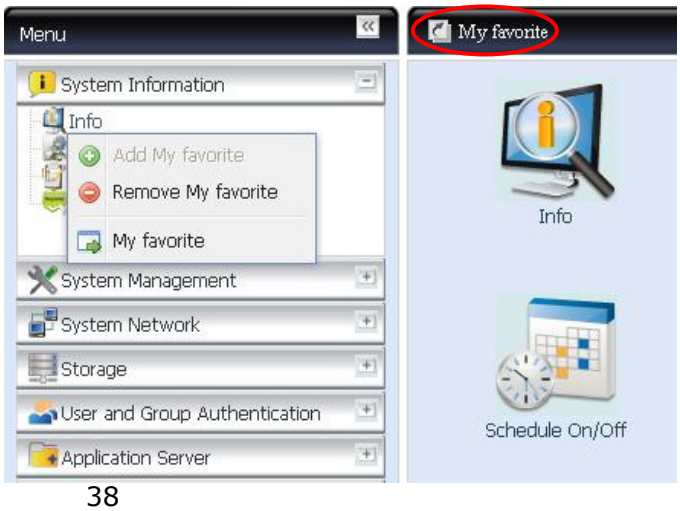
My Favorite

The user interface with "My Favorite" shortcut is allowed user to designate often used items and have them display on the main screen area. The figure below displays 12 default favorite functions.

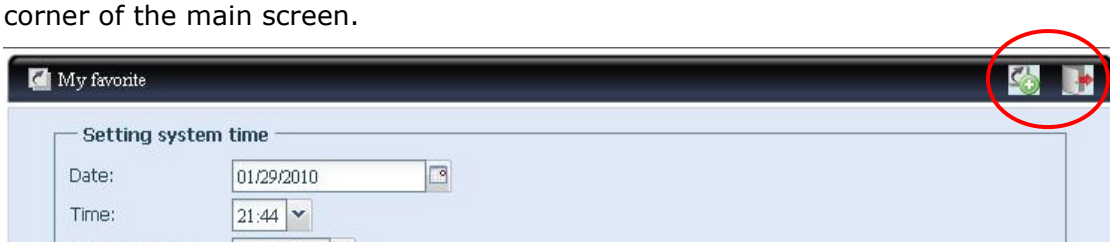


Administrators can add or remove favorite functions to My Favorites by right clicking the mouse on the menu tree.

The other way administrators can add favorite functions is by clicking the "Add Favorite" icon in each function screen. Please refer figure below in red circuit icon.

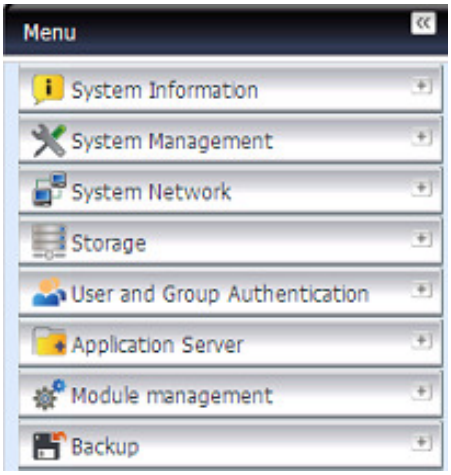


To return to the favorite screen, simply click "My Favorite" located at the left hand corner of the main screen.



Menu Bar

The **Menu Bar** is where you will find all of the information screens and system settings of Thecus IP storage. The various settings are placed in the following groups on the menu bar:



Menu Bar	
Item	**Description**
System Information	Current system status of the Thecus IP storage.
System Management	Various Thecus IP storage system settings and information.
System Network	Information and settings for network connections, as well as various services of the Thecus IP storage.
Storage	Information and settings for storage devices installed into the Thecus IP storage.
User and Group Authentication	Allows configuration of users and groups.
Application Server	Printer Server and iTunes Server to set up of the Thecus IP storage.
Module Management	System and user Module to install of the Thecus IP storage.
Backup	Category of Backup Features set up of the Thecus IP storage.

Moving your cursor over any of these items will display the dropdown menu selections for each group.

In the following sections, you will find detailed explanations of each function, and how to configure your Thecus IP storage.

Message Bar

You can get information about system status quickly by moving mouse over.

Message Bar		
Item	**Status**	**Description**
	RAID Information.	Display the status of created RAID volume. Click to go to RAID information page as short cut.
	Disks Information.	Display the status of disks installed in the system. Click to go to Disk information page as short cut.
	FAN.	Display system FAN Status. Click to go to System Status page as short cut.
	UPS.	Display UPS device status. Click to go to UPS Setting page as short cut. **(N0204/N2200PLUS/EVO,N4100EVO not supported)**
	Temperature.	Green: Systematic temperature is normal. Red: Systematic temperature is unusual. Click to go to System Status page as short cut.
	Network.	Green: Connection to network is normal. Red: abnormal connection to the network

Logout

Click to logout Web Administration Interface.

Language Selection

The Thecus IP storage supports multiple Languages, including:

- English
- Japanese
- Traditional Chinese
- Simplified Chinese
- French
- German
- Italian
- Korean
- Spanish
- Russia
- Polish

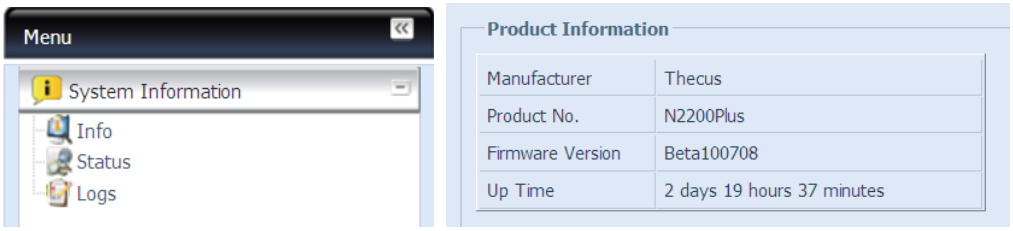
On the menu bar, click **Language** and the **selection** list appears. This user interface will switch to selected Language for Thecus IP storage.

System Information

Information provides viewing on current Product info, System Status, Service Status and Logs.
The menu bar allows you to see various aspects of the Thecus IP storage. From here, you can discover the status of the Thecus IP storage, and also other details.

Product Information

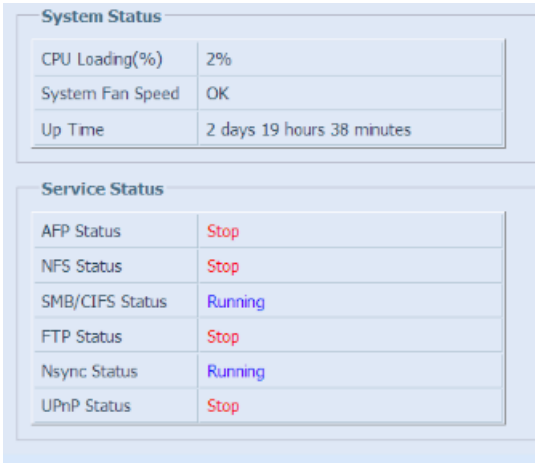
Once you login, you will first see the basic **Product Information** screen providing **Manufacturer**, **Product No.**, **Firmware Version**, and **System Up Time** information.



Product Information	
Item	**Description**
Manufacturer	Displays the name of the system manufacturer.
Product No.	Shows the model number of the system.
Firmware version	Shows the current firmware version.
Up time	Displays the total run time of the system.

System/Service Status

From the **Status** menu, choose the ***System*** item, **System Status** and **Service Status** screens appear. These screens provide basic system and service status information.

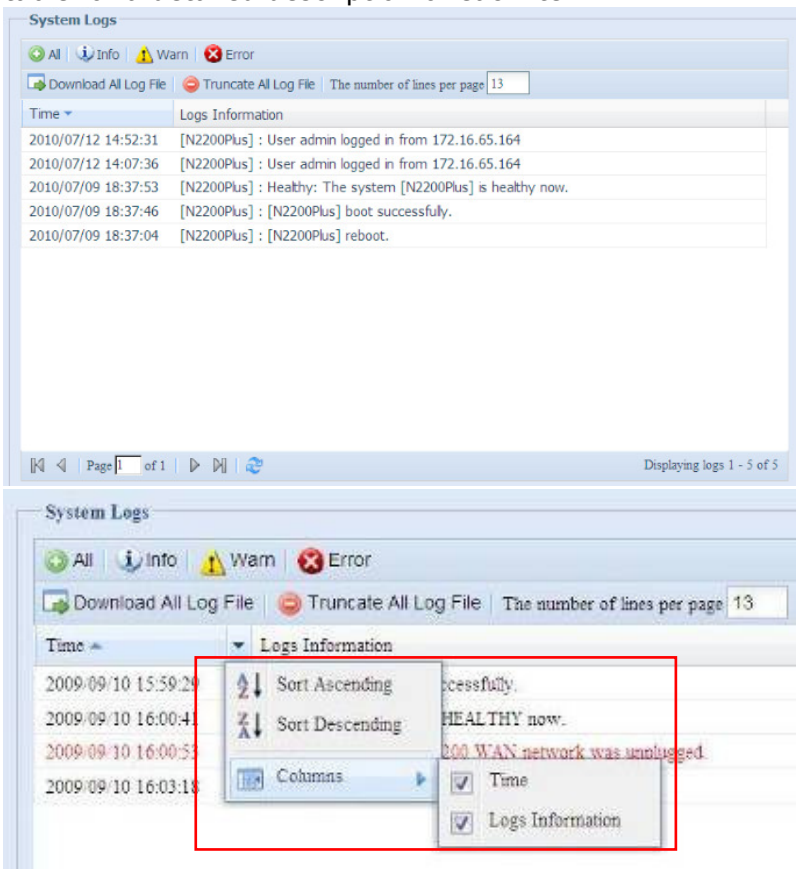


System Status	
Item	**Description**
CPU Loading (%)	Displays current CPU workload of the N2200PLUS.
System Fan Speed	Displays the current status of the system fan.
Up Time	Shows how long the system has been up and running.

Service Status	
Item	**Description**
AFP Status	The status of the Apple Filing Protocol server.
NFS Status	The status of the Network File Service Server.
SMB/CIFS Status	The status of the SMB/CIFS server.
FTP Status	The status of the FTP server.
Media Server	The status of the Media Server
Nsync Status	The status of the Nsync server.
UPnP Status	The status of the UPnP service.

Logs

From the **System Information** menu, choose the **Logs** item and the **System Logs** screen appears. This screen shows a history of system usage and important events such as disk status, network information, and system booting. See the following table for a detailed description of each item:



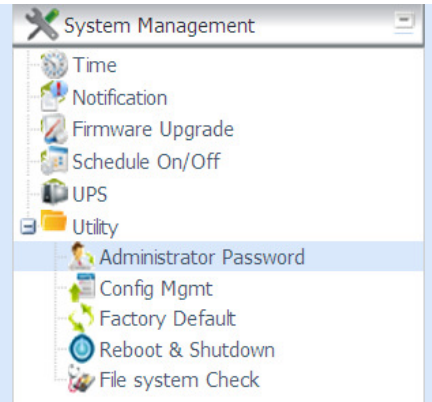
See the following table for a detailed description of each item:

System Logs	
Item	**Description**
All	Provides all log information including system messages, warning messages and error messages.
INFO	Records information about system messages.
WARN	Shows only warning messages.
ERROR	Shows only error messages.
Download All Log File	Export all logs to an external file.
Truncate All Log File	Clear all log files.
The number of lines per page	Specify desired number of lines to display per page.
Sort Ascending	Shows logs by date in ascending order.

Sort Descending	Shows logs by date in descending order.
|<< < > >>|	Use the forward (**>** **>>|**) and backward (**|<<** **<**) buttons to browse the log pages.
	Refresh the logs.

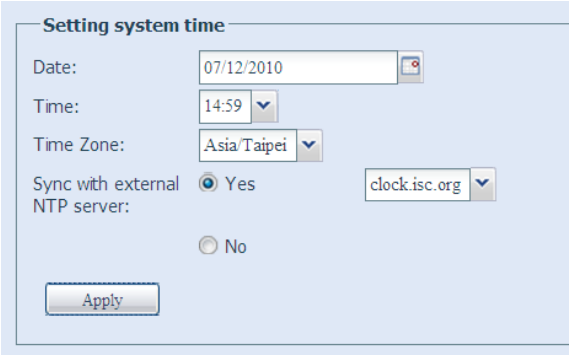
System Management

The **System Management** menu gives you a wealth of settings that you can use to configure your Thecus IP storage system administration functions. You can set up system time, system notifications, and even upgrade firmware from this menu.



Time: Setting system time

From the **time** menu, choose the **Time** item and the **Time** screen appears. Set the desired **Date**, **Time**, and **Time Zone**. You can also elect to synchronize the system time on the IP STORAGE with an **NTP (Network Time Protocol) Server**.



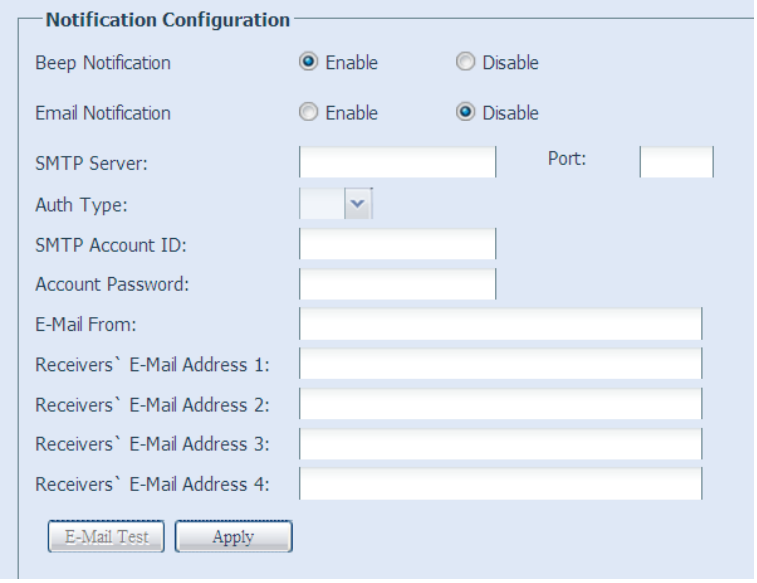
See the following table for a detailed description of each item:

Time	
Item	**Description**
Date	Sets the system date.
Time	Sets the system time.
Time Zone	Sets the system time zone.
Act as NTP Server	Select ***Enable*** to synchronize with the NTP server. Select Disable to close the NTP server synchronization.
Sync with external NTP Server	Select **YES** to allow the IP STORAGE to synchronize with an NTP server of your choice. Press **Apply** to change.

WARNING If an NTP server is selected, please make sure your Thecus IP storage has been setup to access the NTP server.

Notification configuration

From the menu, choose the ***Notification*** item, and the **Notification Configuration** screen appears. This screen lets you have the IP STORAGE notify you in case of any system malfunction. Press ***Apply*** to confirm all settings. See following table for a detailed description of each item.



Notification Configuration	
Item	**Description**
Beep Notification	Enable or disable the system beeper that beeps when a problem occurs.
Email Notification	Enable or disable email notifications of system problems.
Account Password	Enter a new password.
E-mail From	Set email address to send email.
Receiver's E-mail Address (1,2,3,4)	Add one or more recipient's email addresses to receive email notifications.

NOTE Consult with your mail server administrator for email server information.

Firmware Upgrade

From the menu, choose the ***Firmware Upgrade*** item and the **Firmware Upgrade** screen appears.

Follow the steps below to upgrade your firmware:

1. Use the ***Browse*** button to find the firmware file.
2. Press ***Apply***.
3. The beeper beeps and the Busy LED blinks until the upgrade is complete.

NOTE

- The beeper only beeps if it is enabled in the System Notification menu.
- Check Thecus website for the latest firmware release and release notes.
- Downgrading firmware is not permitted.

WARNING

Do not turns off the system during the firmware upgrade process.
This will lead to a catastrophic result that may render the system inoperable.

Schedule Power On/Off (Only for N0204/N2200/EVO,N4100EVO)

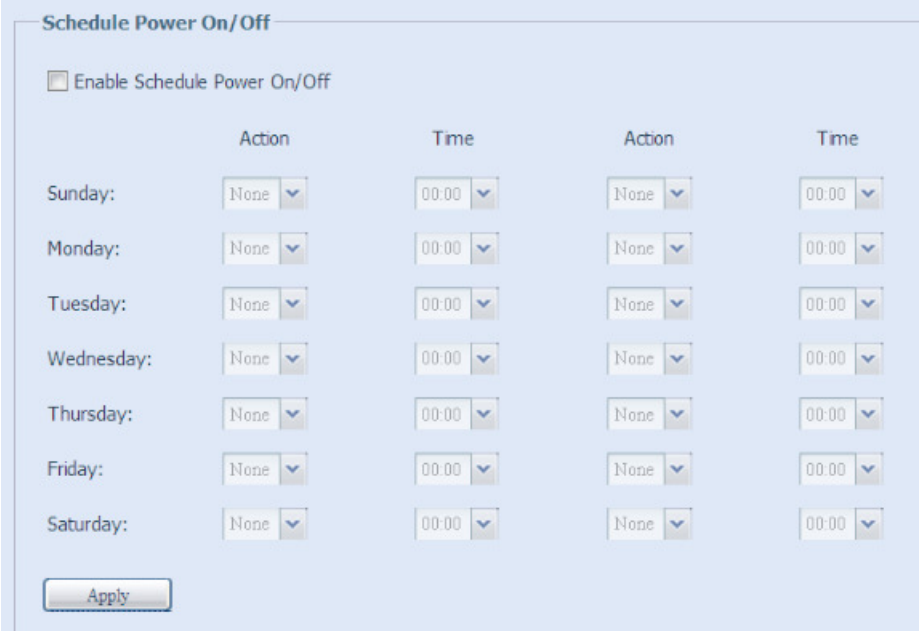
Using the Thecus IP storage System Management, you can save energy and money by scheduling the Thecus IP storage to turn itself on and off during certain times of the day.

From the menu, choose the **Schedule Power On/Off** item and the **Schedule Power On/Off** screen appears.

To designate a schedule for the Thecus IP storage to turn on and off, first enable the feature by checking the **Enable Schedule Power On/Off** checkbox.

Then, simply choose an on and off time for each day of the week that you would like to designate a schedule by using the various dropdowns.

Finally, click ***Apply*** to save your changes.



Example - Monday: On: 8:00; Off: 16:00
System will turn on at 8:00 AM on Monday, and off at 16:00 on Monday. System will turn on for the rest of the week.

If you choose an on time, but do not assign an off time, the system will turn on and remain on until a scheduled off time is reached, or if the unit is shutdown manually.

Example - Monday: On: 8:00

System will turn on at 8:00 AM on Monday, and will not shut down unless powered down manually.

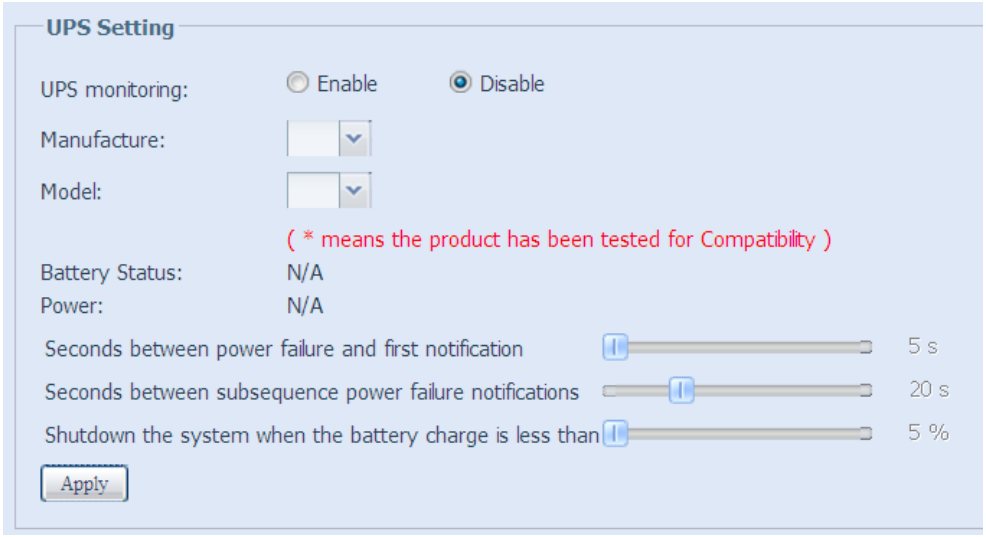
You may also choose two on times or two off times on a particular day, and the system will act accordingly.

Example - Monday: Off: 8:00; Off: 16:00
System will turn off at 8:00 AM on Monday. System will turn off at 16:00 PM on Monday, if it was on. If the system was already off at 16:00 PM on Monday, system will stay off.

UPS Setting (Only for N2200)

The Thecus IP storage can also support various uninterruptible power supply unit via either "Serial" or "USB" interface (depend on model) to provide extra data security and accessibility in the case of a power failure.

From the **Status** menu, choose the ***UPS*** item and the **UPS Setting** screen appears. Make any changes you wish, and press ***Apply*** to confirm changes.



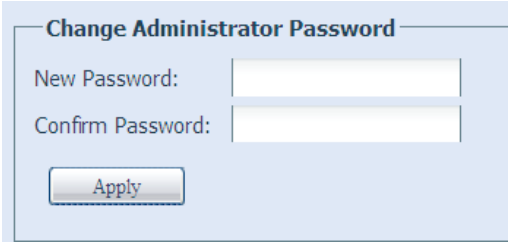
See the following table for a detailed description of each item.

UPS Setting	
Item	**Description**
UPS Monitoring	Enable or disable UPS monitoring.
Manufacturer	Choose the UPS manufacturer from the dropdowns.
Model	Choose the UPS model number from the dropdowns.
Battery Status	Current status of the UPS battery
Power	Current status of the power being supplied to the UPS
Seconds between power failure and first notification	Delay between power failure and first notification in seconds.
Seconds between subsequent power failure notifications	Delay between subsequent notifications in seconds.
Shutdown the system when the battery charge is less than	Amount of UPS battery remaining before system should auto-shutdown.
Apply	Press ***Apply*** to save your changes.

Utility

- **Administrator password**

From the menu, choose the **Administrator Password** item and the **Change Administrator Password** screen appears. Enter a new password in the **New Password** box and confirm your new password in the **Confirm Password** box. Press ***Apply*** to confirm password changes.



See the following table for a detailed description of each item.

Change Administrator and LCD Entry Password	
Item	**Description**
New Password	Type in a new administrator password.
Confirm Password	Type the new password again to confirm.
Apply	Press this to save your changes.

- **Config Mgmt**

From the menu, choose the ***Config Mgmt*** item and the **System Configuration Download/Upload** screen appears. From here, you can download or upload stored system configurations.

See the following table for a detailed description of each item.

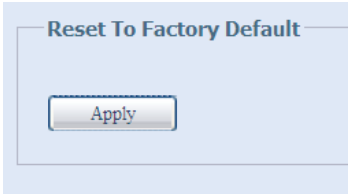
System Configuration Download/Upload	
Item	**Description**
Download	Save and export the current system configuration.
Upload	Import a saved configuration file to overwrite current system configuration.

NOTE

Backing up your system configuration is a great way to ensure that you can revert to a working configuration when you are experimenting with new system settings. The system configuration you have backup can be only restore in same firmware version. And the backup details have excluded user/group accounts.

- **Factory default**

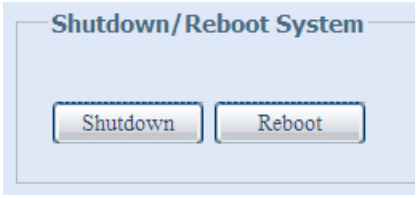
From the menu, choose the ***Factory Default*** item and the **Reset to Factory Default** screen appears. Press ***Apply*** to reset the IP Storage to factory default settings.



WARNING Resetting to factory defaults will not erase the data stored in the hard disks, but WILL revert all the settings to the factory default values.

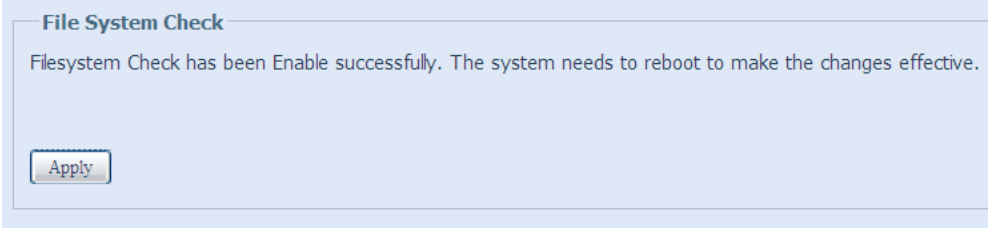
- **Reboot & Shutdown**

From the menu, choose **Reboot & Shutdown** item, and the **Shutdown/Reboot System** screen appears. Press ***Reboot*** to restart the system or ***Shutdown*** to turn the system off.



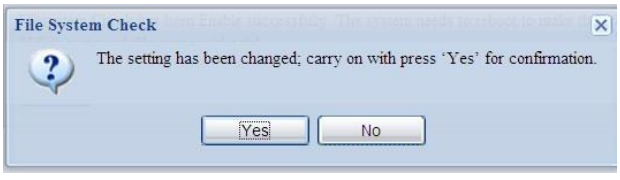
- **File System check**

The File System Check allows you to perform a check on the integrity of your disks' file system. Under the menu, click ***File system Check*** and the **File System Check** prompt appears.

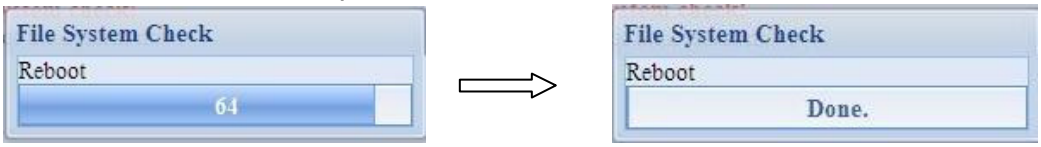

File System Check
Filesystem Check has been Enable successfully. The system needs to reboot to make the changes effective.
Apply

To perform a file system check, click ***Apply***.

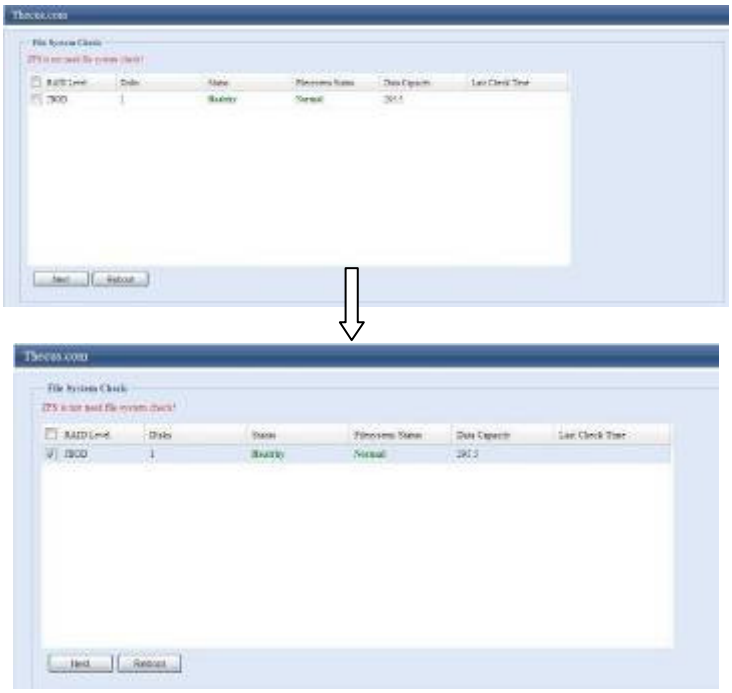
Once clicked, the following prompt will appear:



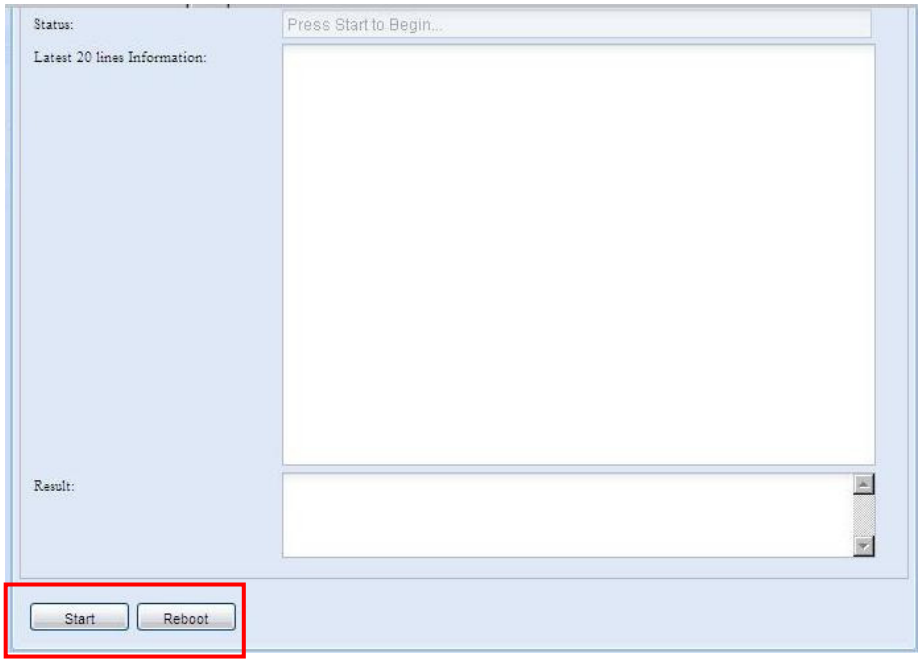
Click ***Yes*** to reboot the system.



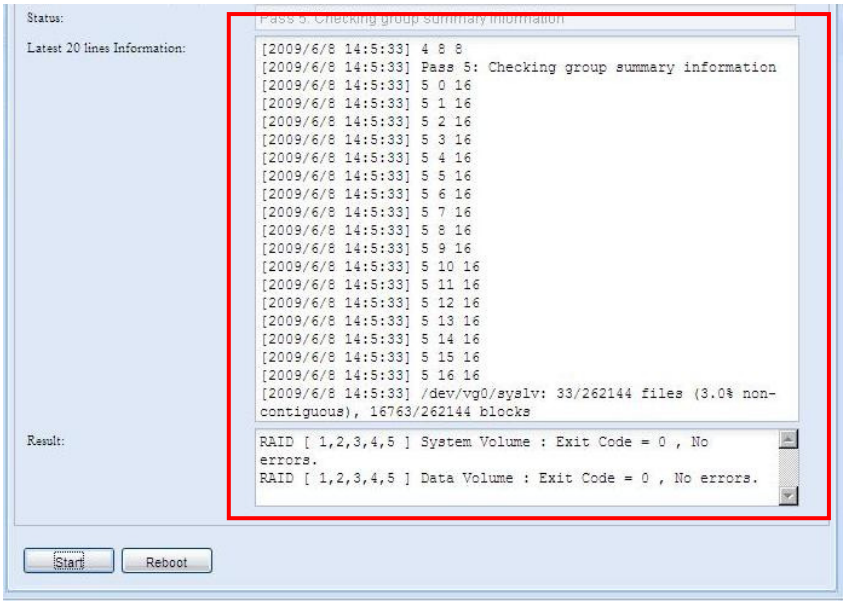
Once the system has rebooted, you will be returned to the **File System Check** prompt. Check the desired RAID volumes and click ***Next*** to proceed with the file system check. Click ***Reboot*** to reboot without running the check.



Once you click ***Next***, you will see the following screen:



Click ***Start*** to begin the file system check. Click ***Reboot*** to reboot the system. When the file system check is run, the system will show 20 lines of information until it is complete. Once complete, the results will be shown at the bottom.

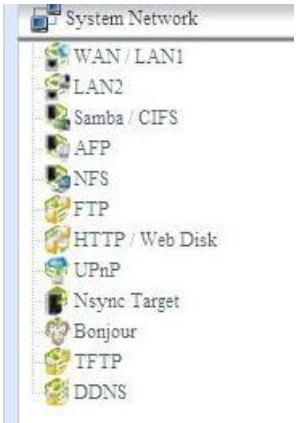


NOTE

The system must be rebooted before the Thecus IP Storage can function normally after file system check complete.

System Network

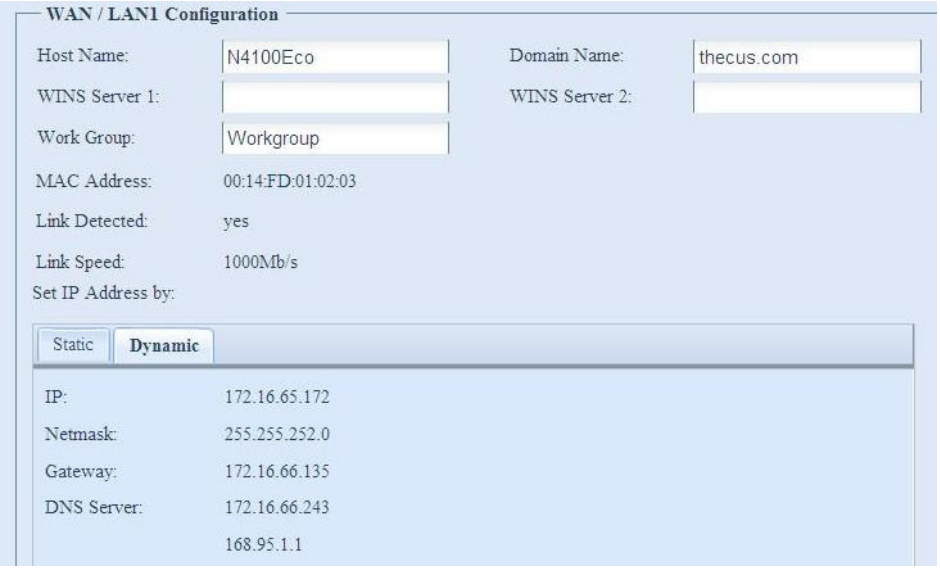
Use the **System Network** menu to make network configuration settings as well as service support settings.



WAN/LAN1

WAN/LAN1 Configuration

From the **System Network** menu, choose ***WAN/LAN1***, and the **WAN/LAN1 Configuration** screen appears. This screen displays the network parameters of the WAN/LAN1 connection. You may change any of these items and press ***Apply*** to confirm your settings. See a description of each item in the following table:



WAN/LAN1 Configuration	
Item	**Description**
Host name	Host name that identifies the IP Storage on the network.
Domain name	Specifies the domain name of the IP Storage.
WINS Server	To set a server name for NetBIOS computer.
MAC Address	MAC address of the network interface.
Set IP Address by: Static / Dynamic	You can choose a static IP or Dynamic IP, and input your network configuration.
IP	IP address of the WAN interface.
Netmask	Network mask, which is generally: 255.255.255.0
Gateway	Default Gateway IP address.
DNS Server	Domain Name Service (DNS) server IP address.

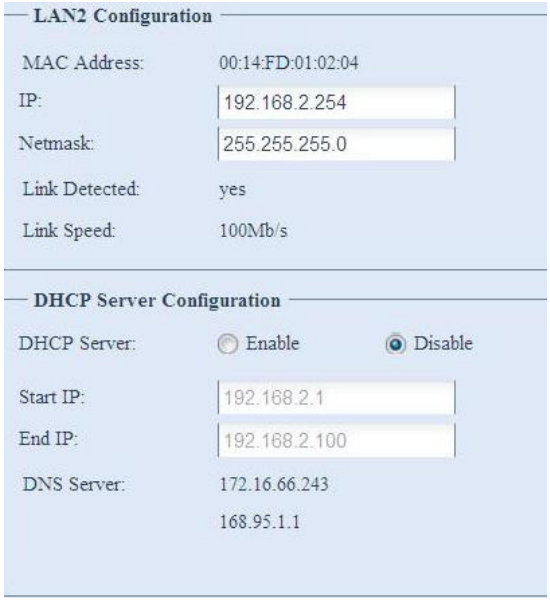
NOTE

- Enabling DHCP automatically turns on UPnP— see the Service Support Screen.
- A correct DNS setting is vital to networks services, such as SMTP and NTP.

LAN2 (Only for N2200PLUS/EVO,N4100EVO)

LAN2 Configuration

The Thecus IP storage supports two Gigabit Ethernet ports for higher service availability. To configure these ports, choose ***LAN2*** from the **System Network** menu, and the **LAN2 Configuration** screen appears. Press ***Apply*** to save your changes.



LAN2 Configuration	
Item	**Description**
MAC Address	Displays the MAC address of the LAN2 interface.
IP	Specifies the IP address of the LAN2 interface.
Netmask	Specifies the Network Mask of the LAN2 interface.
Link Detected	Specifies the LAN2 port link status.
Link Speed	Specifies the LAN2 port link speed.

DHCP Server Configuration

A DHCP server can be configured to assign IP addresses to devices connected to the LAN2 port. To configure these ports, choose ***LAN2*** from the **System Network** menu.

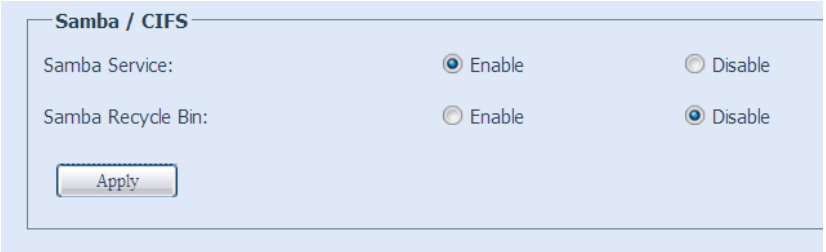
DHCP Configuration	
Item	**Description**
DHCP Server	Enable or disable the DHCP server to automatically assign IP address to PCs connected to the LAN2 interface.
Start IP	Specifies the starting IP address of the DHCP range.
End IP	Specifies the ending IP address of the DHCP range.
DNS Server	Displayed the DNS server IP address.

NOTE The IP Segment of WAN/LAN1 and LAN2 should not overlap.

WARNING The IP address of the LAN2 interface should not be in the range of the Start IP address and End IP address.

Samba / CIFS

There are 2 options is currently allow Admin to Enable/Disable to operate Thecus IP storage associated with Samba / CIFS protocol. With the option changed, it will need to reboot system to activate.



Samba Service

Used for letting the operating system of UNIX series and SMB/CIFS of Microsoft Windows operating system (Server Message Block / Common Internet File System).Do the link in network protocol. Enable or Disable SMB/CIFS protocol for Windows, Apple, Unix drive mapping.

NOTE

- In some environments, due to security concerns, you may wish to disable SMB/CIFS as a precaution against computer viruses.

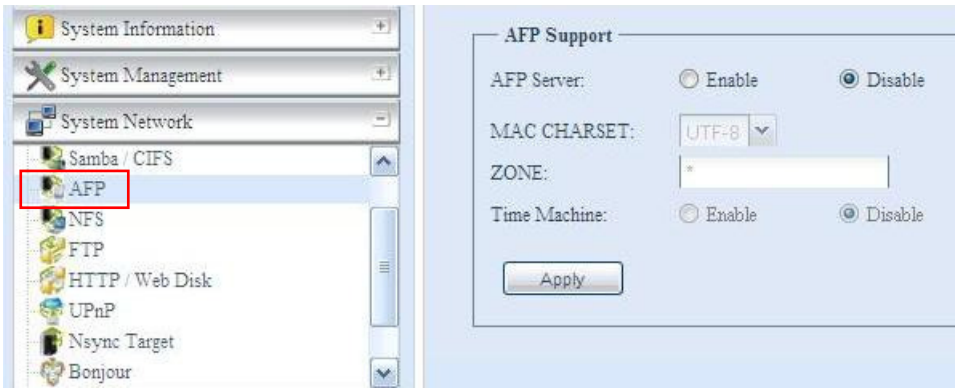
Samba Recycle Bin

The Thecus IP storage is supported recycle bin via SMB/CIFS protocol. Simply enable it then all of deleted files/folders will reside in the ".recycle" folder with hidden attribution in each share.

In general, Windows has default to invisible all of hidden folders/files. So please enable this option to view ".recycle" folder.

AFP (Apple Network Setup)

From the **System Network** menu, choose the ***AFP*** item, and the **AFP Support** screen appears. This screen displays the configuration items for the Apple Filing Protocol. You can change any of these items and press ***Apply*** to confirm your settings.

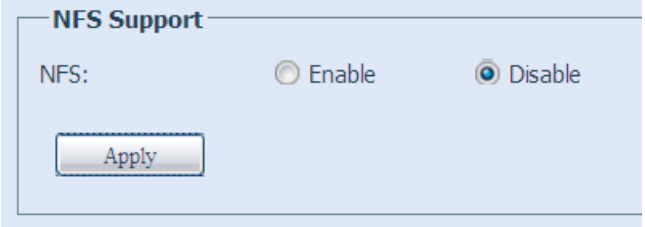


A description of each item follows:

Apple Network Configuration	
Item	**Description**
AFP Server	Enable or disable Apple File Service to use the IP STORAGE with MAC OS-based systems.
MAC CHARSET	Specifics the code page from drop down list
Zone	Specifies Zone for Applet Talk service. If your AppleTalk network uses extended networks and is assigned with multiple zones, assign a zone name to the IP STORAGE. If you do not want to assign a network zone, enter an asterisk (*) to use the default setting.
Time Machine	Enable checked box while you like to backup you MAC system to have Thecus IP storage as MAC time machine

NFS Setup

From the **System Network** menu, choose the ***NFS*** item, and the **NFS Support** screen appears. The Thecus IP storage can act as an NFS server, enabling users to download and upload files with the favorite NFS clients. Press ***Apply*** to confirm your settings.

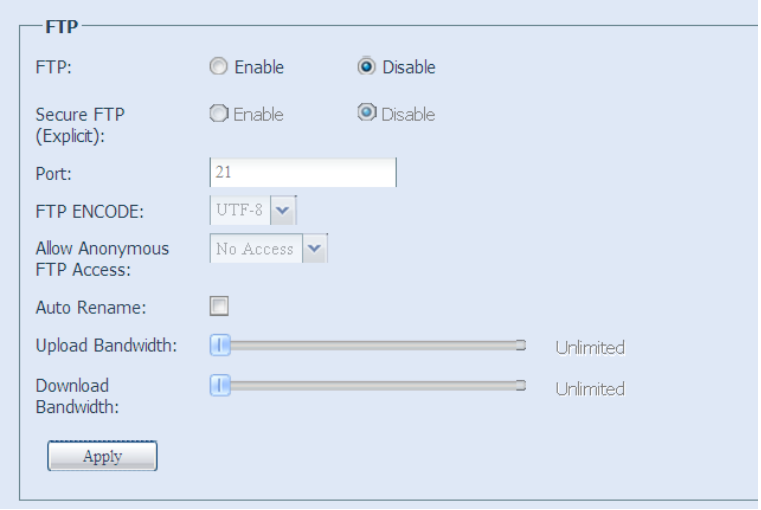


A description of each item follows:

NFS Server Setting	
Item	**Description**
NFS	**Enable** or **Disable** NFS support.
Apply	Click ***Apply*** to save your changes.

FTP

Thecus IP storage can act as a FTP server, enabling users to download and upload files with their favorite FTP programs. From the **System Network** menu, choose the ***FTP*** item, and the **FTP** screen appears. You can change any of these items and press ***Apply*** to confirm your settings.



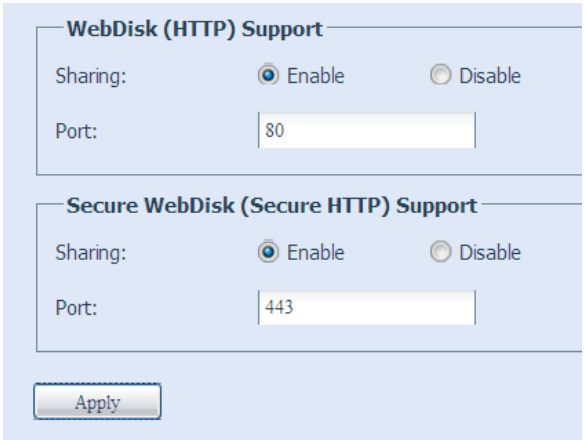
A description of each item follows:

FTP	
Item	**Description**
FTP	Enable FTP Service on the IP Storage.
Security FTP	Enable or disable Security FTP, be sure the client FTP software has also security FTP setting enabled.
Port	Specifies the port number of an incoming connection on a non-standard port.
FTP ENCODE	If your FTP client or operating system does not support Unicode (e.g. Windows® 95/98/ME or MAC OS9/8), select the same encoding as your OS here in order to properly view the files and directories on the server. Available options are BIG5, HZ, GB2312, GB18030, ISO, EUC-JP, SHIFT-JIS and UTF-8.
Allow Anonymous FTP Access	**Upload/Download:** Allow anonymous FTP users to upload or download files to/from public folders. **Download:** Allow anonymous FTP users to download files from public folders. **Upload only (Write only):** Allow anonymous FTP users to upload files from public folders. **No access:** Block anonymous FTP user access.
Auto Rename	If checked, the system will automatically rename files that are uploaded with a duplicate file name. The renaming scheme is `[filename].#`, where `#` represents an integer.
Upload Bandwidth	You may set the maximum bandwidth allocated to file uploads. Selections include **Unlimited, 1, 2, 4, 8, 16** and **32 MB/s.**
Download Bandwidth	You may set the maximum bandwidth allocated to file downloads. Selections include **Unlimited, 1, 2, 4, 8, 16** and **32 MB/s.**

To access the share folder on the Thecus IP storage, use the appropriate user login and password set up on the **Users** page. Access control to each share folder is set up on the **ACL** page (***Storage Management*** > **Shore *Folder*** > ***ACL***).

HTTP/ Web Disk

From the **System Network** menu, choose the **HTTP/ Web Disk** item, and the **Web Disk (HTTP) Support** screen appears. This screen displays the service support parameters of the system. You can change any of these items and press ***Apply*** to confirm your settings.



A description of each item follows:

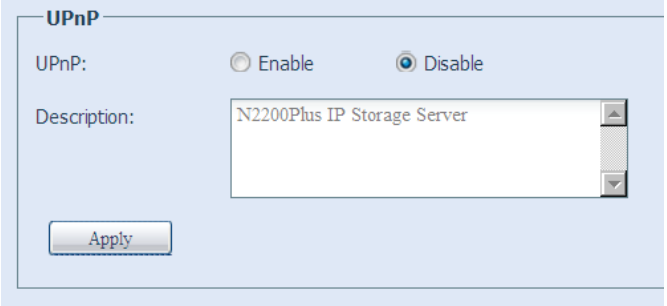
Web Service	
Item	**Description**
HTTP (WebDisk) Support	Enable or disable WebDisk support. Enter the port number if this option is enabled. The port number is default 80.
HTTPs (Secure WebDisk) Support	Enable or disable secure WebDisk support. Enter the port if this option is enabled.

NOTE

- Disable HTTP support and Enable Secure HTTP support to guarantee secure access.

UPnP

This device supports UPnP Media server, which allows users to play media files with UPnP client (ex. DMA devices). Enable or disable Universal Plug and Play protocol. UPnP helps to find the IP address of the Thecus IP storage.

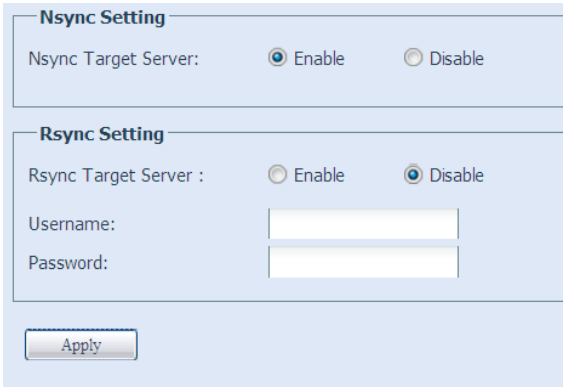


Nsync Target

From the **System Network** menu, choose the **Nsync Target** item, and the **Nsync Setting** screen appears. Enable or Disable your Nsync Target Server. Press ***Apply*** to confirm your settings.

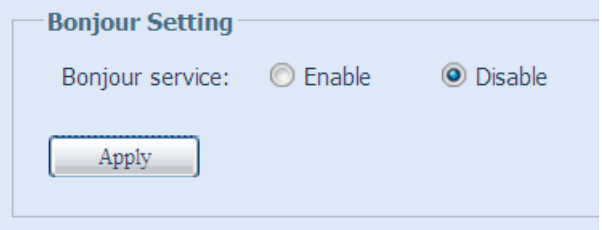
If the Thecus Nsync feature has chose to use Rsync to replicate data between two systems. For the target side to allow source cross data, the Rsync target server needs to assign a username and password for authentication.

Once **Nsync Target** has been enabled, the other Thecus NAS product is able to operate remote replication to this NAS system.



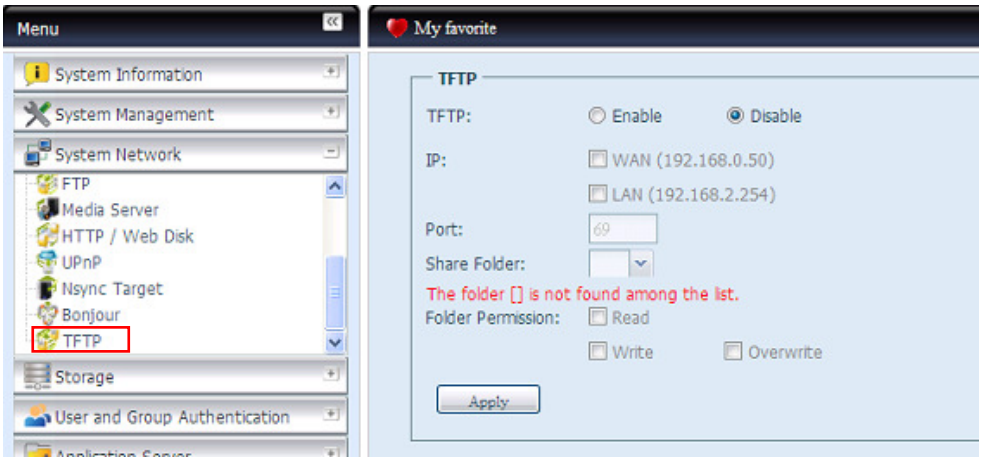
Bonjour Setting

Bonjour, is Apple Inc.'s trade name for its implementation of Zeroconf, a service discovery protocol. Bonjour locates devices such as printers, as well as other computers, and the services that those devices offer on a local network using multicast Domain Name System service records. This definitive guide walks you through Bonjour zero-configuration networking with a complete description of the protocols and technologies used to create Bonjour enabled applications and devices.



TFTP

Thecus IP storage can act as a TFTP server, enabling users to download and upload files with their favorite TFTP programs. From the **System Network** menu, choose the ***TFTP*** item, and the **TFTP** screen appears. You can change any of these items and press ***Apply*** to confirm your settings.



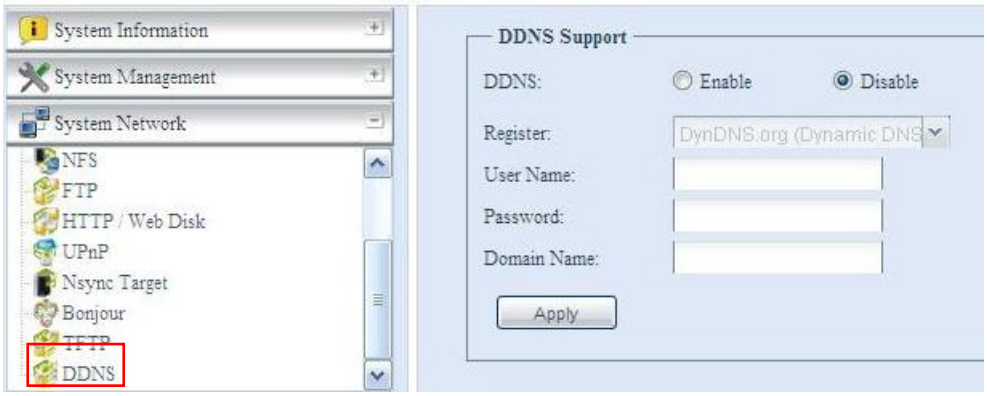
A description of each item follows:

FTP	
Item	**Description**
TFTP	Enable TFTP Service on the Thecus IP storage.
IP	Checked WAN/LAN1 or LAN2 to enable port use
Port	Specifies the port number of an incoming connection on a non-standard port.
Share Folder	Select the file stored folder, it can not be empty.
Folder Permission	Select the folder permission

DDNS

To set up a server on the Internet and enable the users to connect to it easily, a fixed and easy-toremember host name is often required. However, if the ISP provides only dynamic IP address, the IP address of the server will change from time to time and is difficult to recall. You can enable the DDNS service to solve the problem. After enabling the DDNS service of the NAS, whenever the NAS restarts or the IP address is changed,the NAS will notify the DDNS provider immediately to record the new IP address. When the user tries to connect to the NAS by the host name, the

DDNS will transfer the recorded IP address to the user.
The NAS supports the DDNS providers:
DyDNS.org(Dynamic DNS),DyDNS.org(Custom DNS),DyDNS.org(Static DNS),
www.zoneedit.com,www.no-ip.com.

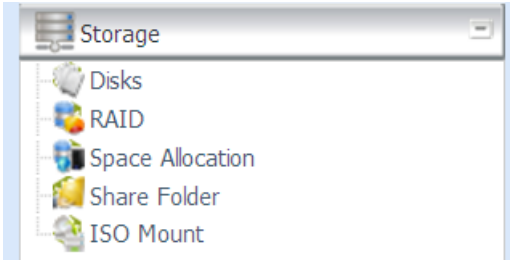


A description of each item follows:

DDNS	
Item	**Description**
DDNS	Enable DDNS Service on the Thecus IP storage.
Register	DDNS provides.
User Name	Select the User Name.
Password	Select the Password.
Domain Name	Select the Domain Name

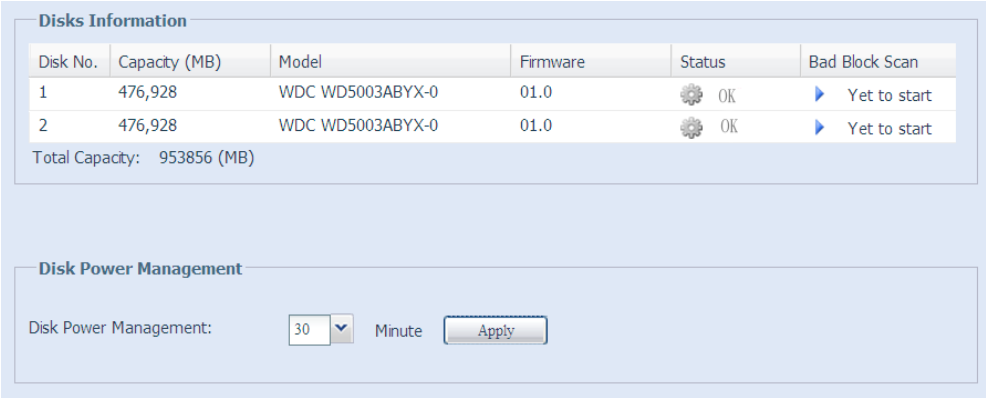
Storage Management

The **Storage** menu displays the status of storage devices installed in the Thecus IP storage, and includes storage configuration options such as RAID and disk settings, folder configuration, space allocation and ISO Mount.



Disks Information

From the **Storage** menu, choose the ***Disks*** item and the **Disks Information** screen appears. From here, you can see various items about installed SATA hard disks. Blank lines indicate that a SATA hard disk is not currently installed in that particular disk slot.



Disks Information	
Item	**Description**
Disk No.	Indicates disk location.
Capacity	Shows the SATA hard disk capacity.
Model	Displays the SATA hard disk model name.
Firmware	Shows the SATA hard disk firmware version.
Status	Indicates the status of the disk. Can read **OK**, **Warning**, or **Failed**.
Bad Block scan	Yes to start scan Bad Block.
Total Capacity	Shows the total SATA hard disk capacity.
Disk Power Management	The administrator can set the disk to power down after a period of inactivity.

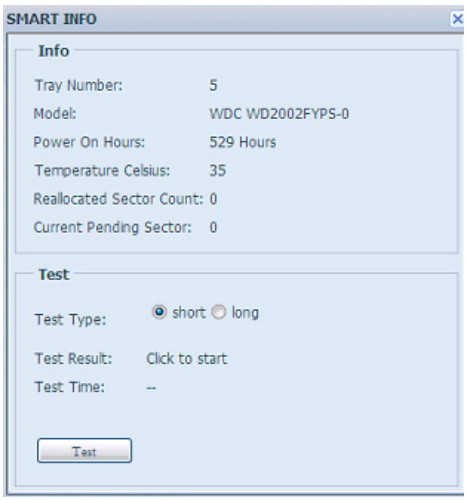
NOTE

When the Status shows Warning, it usually means there are bad sectors on the hard disk. It is shown only as a precaution and you should consider changing the drives.

S.M.A.R.T. Information

On the **Disks Information** screen, the status of each disk will be displayed in the **Status** column. Clicking on an ***OK*** or ***Warning*** link will display the **S.M.A.R.T Information** window for that particular disk.

You may also perform disk SMART test, simply to click "Test" to start with. The result is only for reference and system will not take any action from its result.



S.M.A.R.T. Information	
Item	**Description**
Tray Number	Tray the hard disk is installed in.
Model	Model name of the installed hard disk.
Power ON Hours	Count of hours in power-on state. The raw value of this attribute shows total count of hours (or minutes, or seconds, depending on manufacturer) in power-on state.
Temperature Celsius	The current temperature of the hard disk in degrees Celsius
Reallocated Sector Count	Count of reallocated sectors. When the hard drive finds a read/write/verification error, it marks this sector as "reallocated" and transfers data to a special reserved area (spare area). This process is also known as remapping and "reallocated" sectors are called remaps. This is why, on a modern hard disks, you can not see "bad blocks" while testing the surface - all bad blocks are hidden in reallocated sectors. However, the more sectors that are reallocated, the more a decrease (up to 10% or more) can be noticed in disk read/write speeds.
Current Pending Sector	Current count of unstable sectors (waiting for remapping). The raw value of this attribute indicates the total number of sectors waiting for remapping. Later, when some of these sectors are read successfully, the value is decreased. If errors still occur when reading sectors, the hard drive will try to restore the data, transfer it to the reserved disk area (spare area), and mark this sector as remapped. If this attribute value remains at zero, it indicates that the quality of the corresponding surface area is low.
Test Type	Set short or long time to test.
Test Result	Result of the test.
Test Time	Total time of the test.

NOTE

If the Reallocated Sector Count > 32 or Current Pending Sector of a hard disk drive > 0 , the status of the disk will show "Warning". This warning is only used to alert the system administrator that there are bad sectors on the disk, and they should replace those disks as soon as possible.

Bad Block Scan

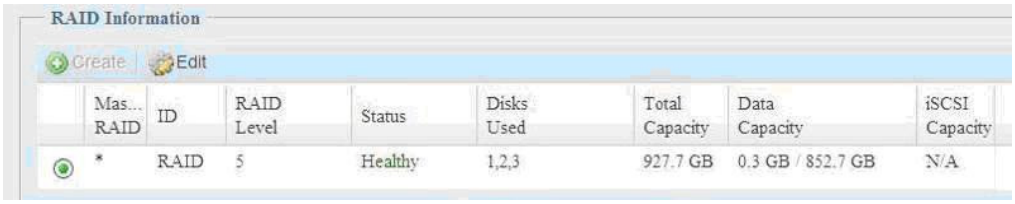
On the **Disks Information** screen, you may also perform disk bad block scan, simply to click "Click to start" to start with. The result is only for reference and system will not take any action from its result.

The testing result will be stay till system reboot with "Yet to start" displayed as default.

RAID Information

From the **Storage** menu, choose the ***RAID*** item and the **RAID Information** screen appears.

This screen lists the RAID volumes currently residing on the Thecus IP storage. From this screen, you can get information about the status of your RAID volumes, as well as the capacities allocated for data, and iSCSI(N4100EVO). There is also a graph which represents how the RAID volume is currently allocated.

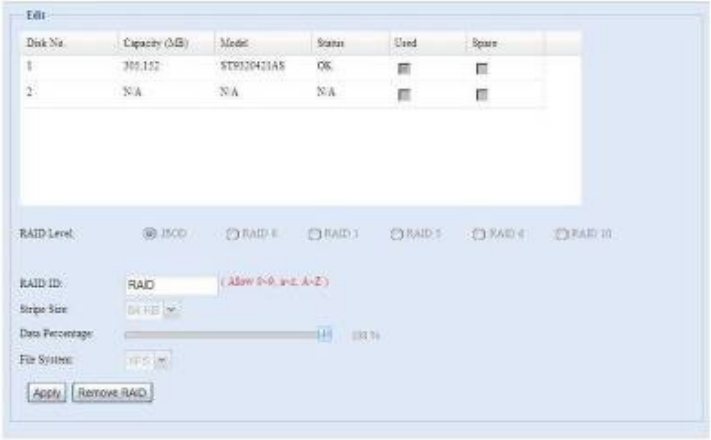


RAID Information	
Item	**Description**
ID	ID of the current RAID volume. **NOTE: All RAID IDs must be unique.**
RAID Level	Shows the current RAID configuration.
Status	Indicates status of the RAID. Can read either ***Healthy***, ***Degraded***, or ***Damaged***.
Disks Used	Hard disks used to form the current RAID volume.
Total Capacity	Total capacity of the current RAID.
Data Capacity	Indicates the used capacity and total capacity used by user data.
iSCSI Capacity	Indicates the capacity allocated to iSCSI. (N4100EVO)

Create a RAID

(Only for N2200PLUS/EVO,N4100EVO,as the N2200 and N0204 use the Smart Utility).On the RAID Information screen, press the create button to go to the CREAT RAID screen. In addition to RAID disk information and status, this screen lets you make RAID configuration settings.

Using **Create RAID**, you can select stripe size, choose which disks are RAID disks or the Spare Disk.

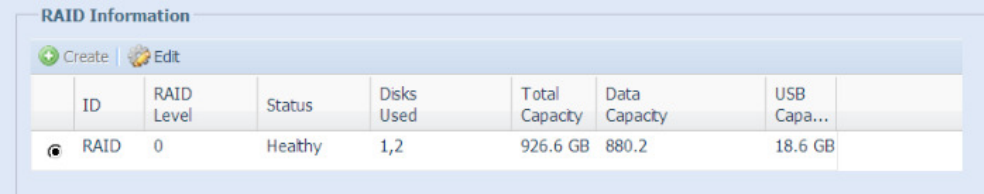


RAID Configurations	
Item	**Description**
Disk No.	Number assigned to the installed hard disks.
Capacity (MB)	Capacity of the installed hard disks.
Model	Model number of the installed hard disks.
Status	Status of the installed hard disks.

Used	If this is checked, current hard disk is a part of a RAID volume.
Spare	If this is checked, current hard disk is designated as a spare for a RAID volume.
Stripe Size	This sets the stripe size to maximize performance of sequential files in a storage volume. Keep the 64K setting unless you require a special file storage layout in the storage volume. A larger stripe size is better for large files.
Data Percentage	The percentage of the RAID volume that will be used to store data.
Create	Press this button to configure a file system and create the RAID storage volume.

To create a RAID volume, follow the steps below:

1. On the **RAID Information** screen, click ***create***.
2. On the **RAID Configuration** screen, set the RAID storage space as **JBOD**, **RAID 0**, **RAID 1,RAID 5(N4100EVO)**— see **Appendix B: RAID Basics** for a detailed description of each.
3. Specify a RAID ID.
4. Specify a stripe size — 64K is the default setting.
5. Specify the percentage allocated for user data by drag the horizontal bar.
6. Press ***Create*** to build the RAID storage volume.



NOTE Building a RAID volume may take time, depending on the size of hard drives and RAID mode. In general, while the RAID volume building process is up to "RAID Building" then the data volume is capable to be accessed.

WARNING Creating RAID destroys all data in the current RAID volume. The data is unrecoverable.

RAID Level

You can set the storage volume as **JBOD**, **RAID 0**, **RAID 1,RAID 5**.
RAID configuration is usually required only when you first set up the device. A brief description of each RAID setting follows:

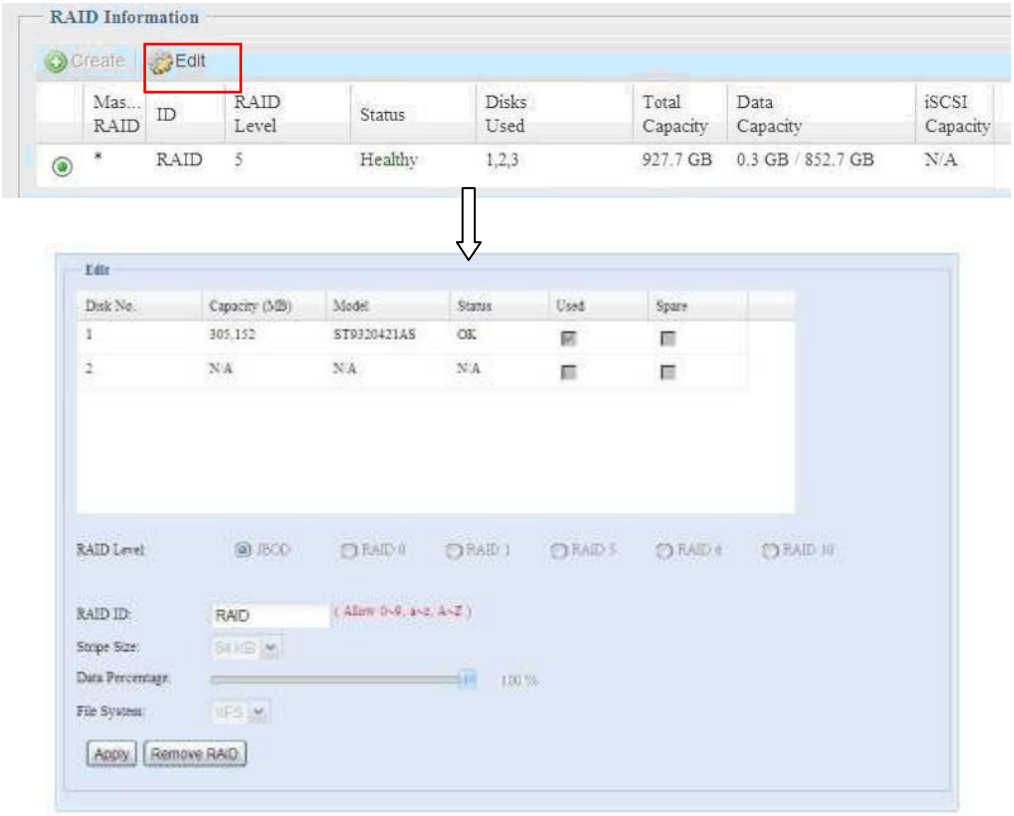
RAID Levels	
Level	**Description**
JBOD	The storage volume is a single HDD with no RAID support. JBOD requires a minimum of 1 disk.
RAID 0	Provides data striping but no redundancy. Improves performance but not data safety. RAID 0 requires a minimum of 2 disks.

RAID 1	Offers disk mirroring. Provides twice the read rate of single disks, but same write rate. RAID 1 requires a minimum of 2 disks.
RAID 5	Data striping and stripe error correction information provided. RAID 5 requires a minimum of 3 disks. RAID 5 can sustain one failed disk.(N4100EVO)

WARNING If the administrator improperly removes a hard disk that should not be removed when RAID status is degraded, all data will be lost.

Edit RAID

On the **RAID Information** screen, press the ***Edit*** button to go to the **RAID Information** screen.
Using **Edit RAID**, you can select RAID ID and the Spare Disk. .



Remove RAID

Click to remove the RAID volume. All user data has been created in selected RAID volume will be removed.

To remove a RAID volume, follow the steps below:

1. On the RAID List screen, select the RAID volume by clicking on its radio button, and click ***RAID Information*** to open the **RAID Configuration** screen.

2. On the **RAID Configuration** screen, click ***Remove RAID***.

3. The confirmation screen appear, you will have to input "Yes" with exactly wording case to complete "**Remove RAID**" operation

WARNING Remove RAID destroys all data in the current RAID volume. The data is unrecoverable.

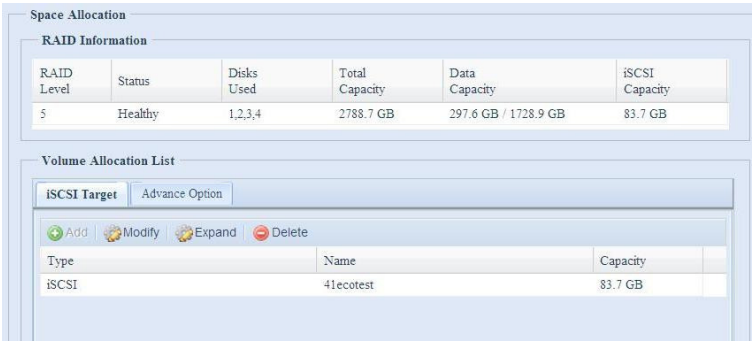
Space Allocation (Only for N2200PLUS/EVO,N4100EVO)

iSCSI Target

You may specify the space allocated for iSCSI (N4100EVO) or target USB volumes (N2200PLUS/EVO). The iSCSI volume can be created 2 volumes on N4100EVO.

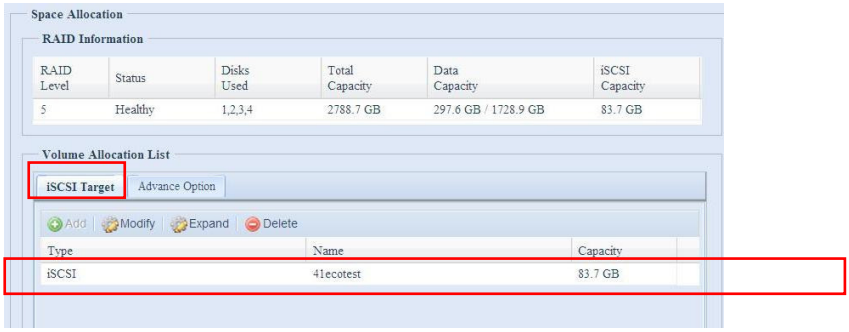
To do this, under the **Storage** menu, click ***RAID*** and the **RAID List** window appears. Select the RAID volume you wish to reallocate by clicking on its radio button, and click ***Space Allocation***. The **RAID Information** and **Volume Allocation List** windows will appear.

The Volume Allocation List displays the space allocated for **iSCSI** volumes on the current RAID volume.



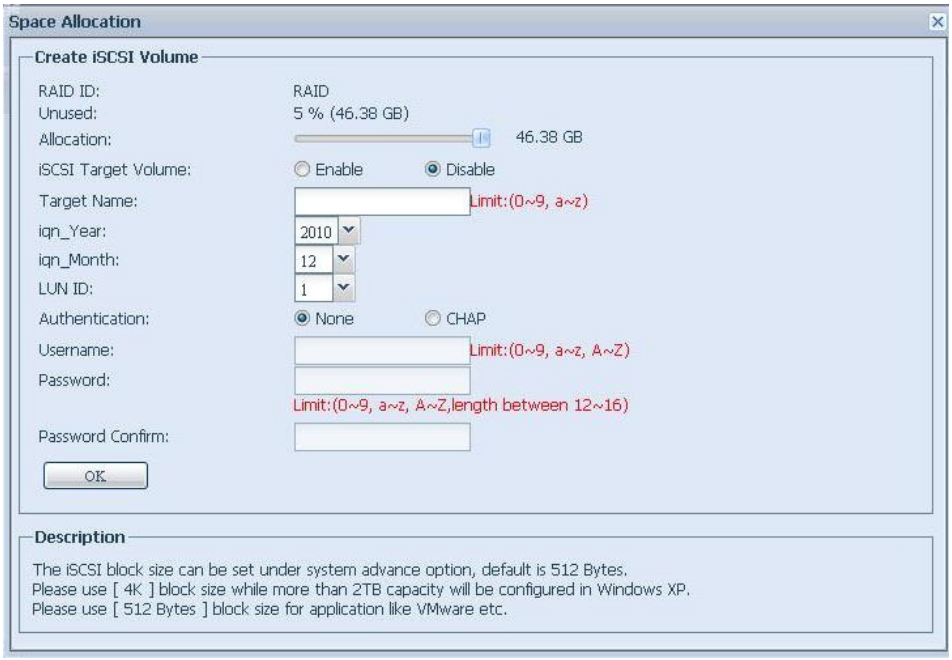
Item	Description
Modify	Click this to modify the allocated space.
Delete	Click this to delete the allocated space.
iSCSI Target	Click to allocate space to iSCSI volume.
Type	Type of volume. Can be either USB or iSCSI.
Name	Name assigned to the volume.
Capacity	Capacity of the allocated space.

Allocating Space for iSCSI Volume



To allocate space for an iSCSI volume on the current RAID volume, follow the steps below:

1. Under the **Volume Allocation List**, select ***iSCSI Target then click Add***. The **Create iSCSI Volume** screen appears.



Create iSCSI Volume	
Item	**Description**
RAID ID	ID of current RAID volume.
Allocation	Percentage and amount of space allocated to iSCSI volume.
Unused	Percentage and amount of unused space on current RAID volume.
iSCSI Target Volume	Enable or Disable the iSCSI Target Volume.
Target Name	Name of the iSCSI Target. This name will be used by the **Stackable NAS** function to identify this export share.
Year	Select the current year from the dropdown.
Authentication	You may choose CHAP authentication or choose None.
Month	Select the current month from the dropdown.
LUN ID	Specific Logic unit ID number.
Username	Enter a username.
Password	Enter a password.
Password Confirm	Reenter the chosen password

2. Designate the percentage to be allocated from the **Allocation** drag bar.

3. Enable the **iSCSI Target Service** by selecting ***Enable***.

4. Choose to enable ***CHAP*** authentication or choose ***None***.

5. Enter a **Target Name**. This will be used by the **Stackable NAS** function to identify this export share.

6. Choose the current year from the **Year** dropdown.

7. Choose the current month from the **Month** dropdown.

8. When iSCSI target volume has been created, the LUN ID is configurable from 1 to 254 with a default of the next available number in ascending numerical order. The LUN ID is unique and can not be duplicated except for LUN ID 0.

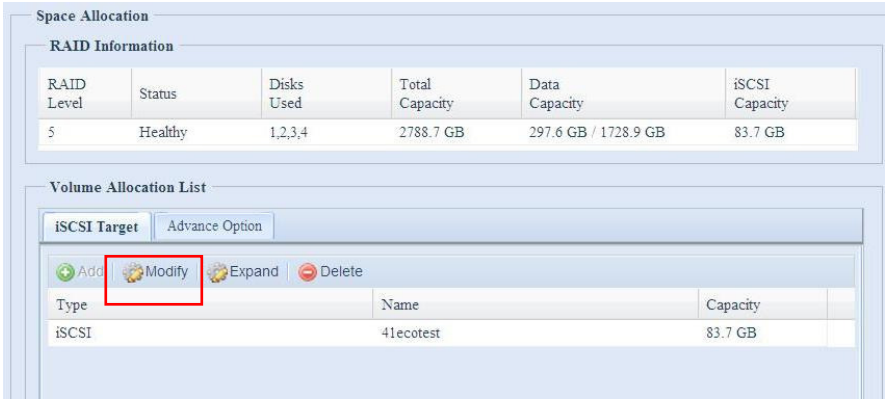
9. If you've enabled CHAP authentication, enter a **username** and a **password**. Confirm your chosen password be reentering it in the **Password Confirm** box.

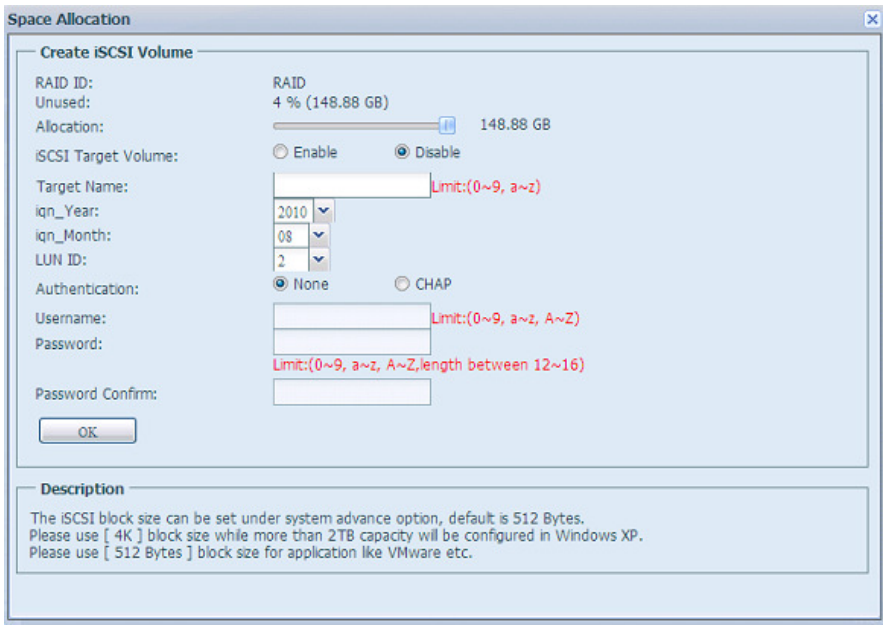
10. Click ***OK*** to create the iSCSI volume.

Modify iSCSI Volume

To Modify iSCSI volume on the current RAID volume, follow the steps below:

1. Under the **Volume Allocation List**, click ***Modify***.
   The **Modify iSCSI Volume** screen appears.

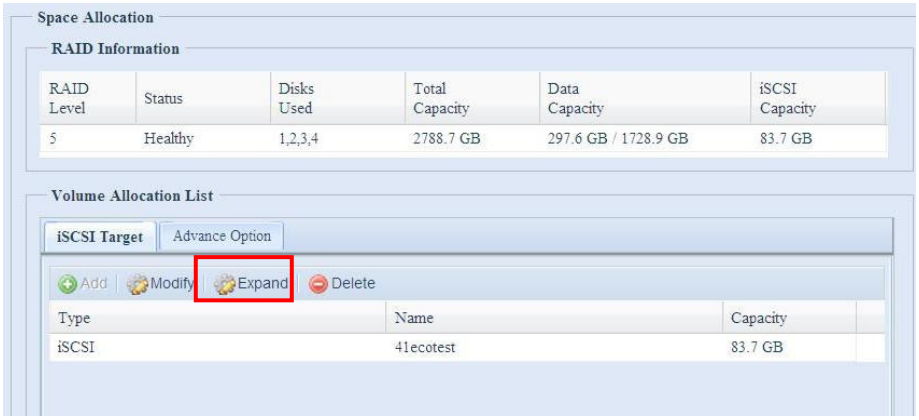




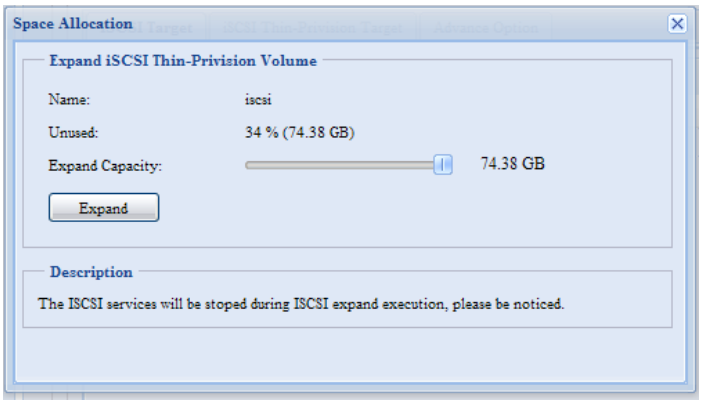
2. Modify your setting. Press **ok** to change.

Expand Volume

The iSCSI volume is now able to expand its capacity from unused space. From the volume list, simply select the iSCSI volume you like to expand and click the **Expand** button:



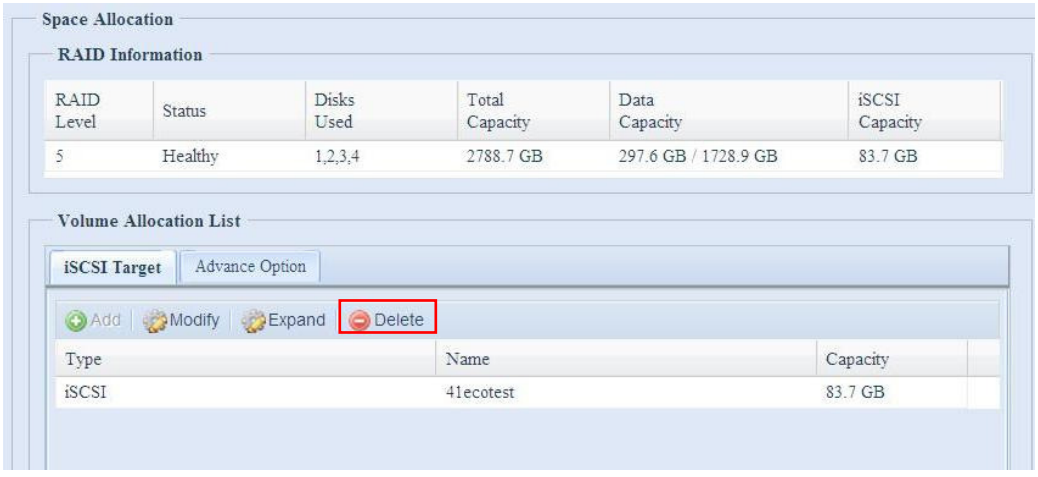
You will then see the dialog box displayed below. Drag the **Expand Capacity** bar to the size you want. Then press **Expand** to confirm the operation.

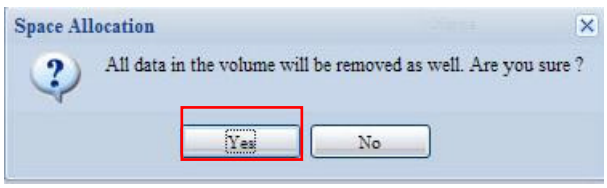


Delete Volume

To delete volume on the current RAID volume, follow the steps below:

1. Under the **Volume Allocation List**, click ***Delete***.
   The **Space Allocation** screen appears.

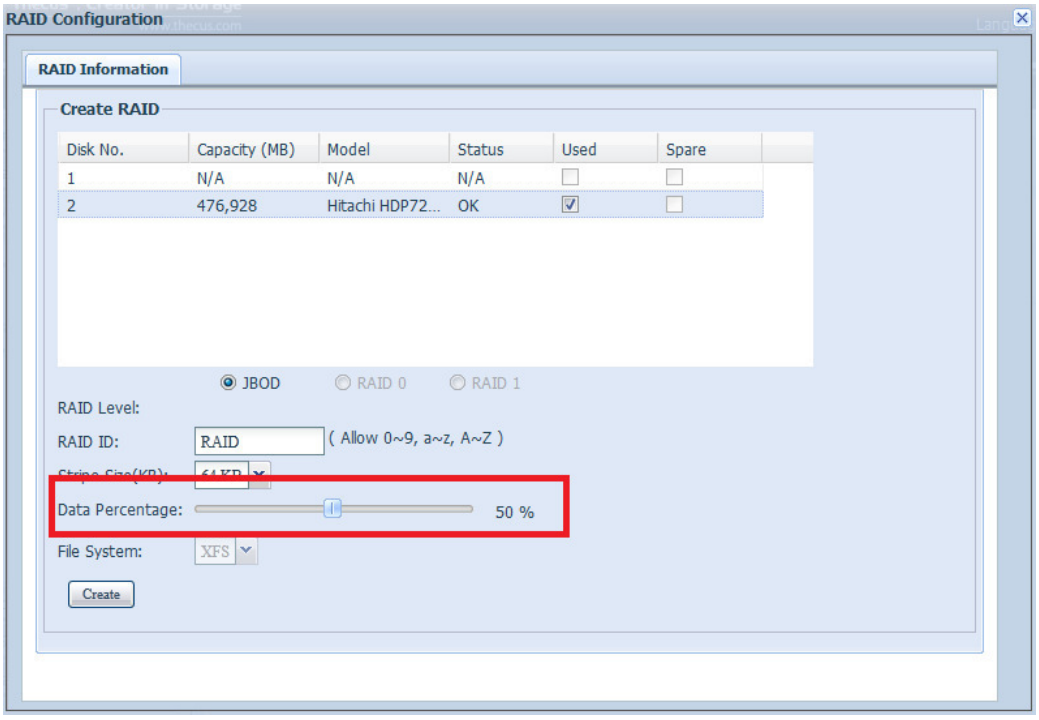




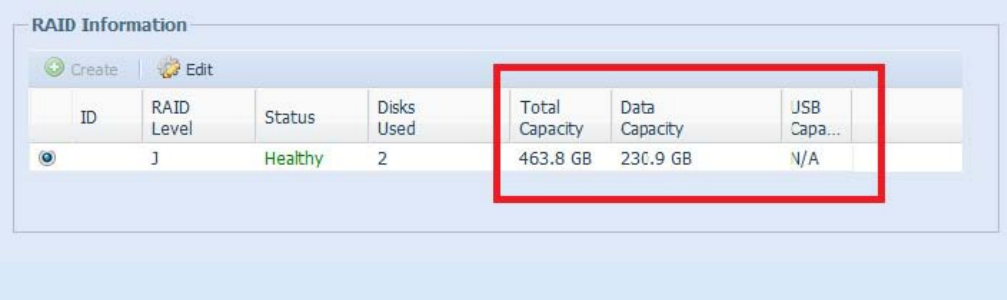
2. Press **YES**. All data in the volume will be removed.

USB Target (for N2200PLUS/EVO)

Create a RAID, please mention the Data percentage option. The data percentage is the percentage you want to allocate for the NAS file system. The NAS file system and the space available for USB target a separate. In this case the data percentage is 50%, this means that 50% will be available for USB target.

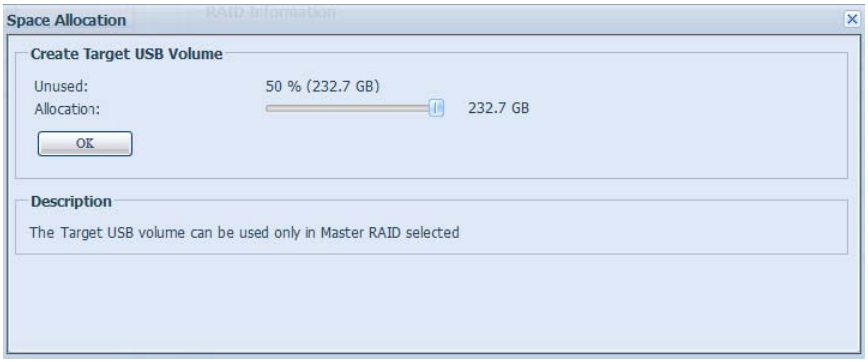


Once the RAID is healthy, check the Total capacity, Data capacity and USB capacity.



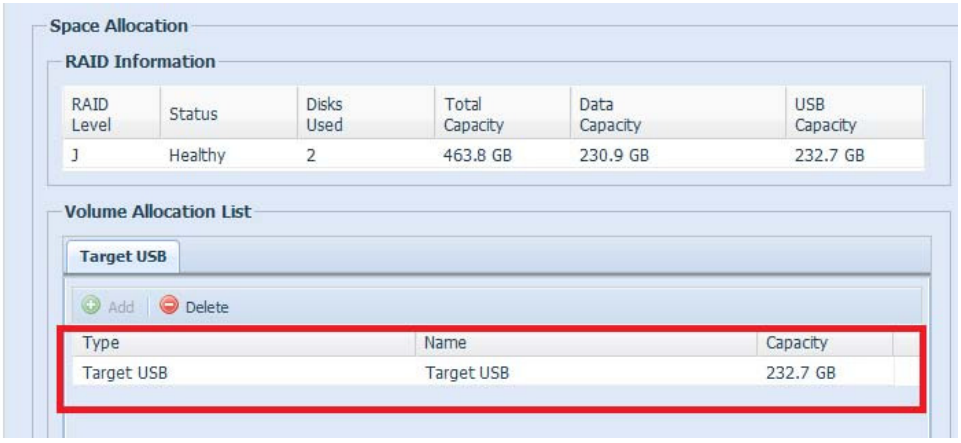
The USB capacity is still N/A, because no space has been allocated for USB yet.

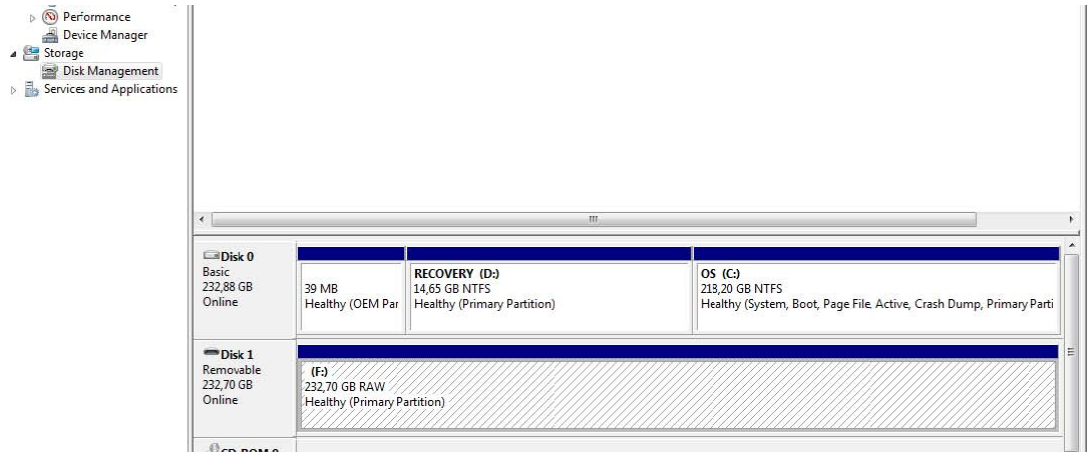
Go to [storage -> space allocation -> target USB -> add, you should see this screen:



Here you can determine how much space you would like to allocate for the USB target. In this case we use all the available space for the USB target. Click [OK] to confirm.

Once created, you should see the size of the USB target here: On the NAS you are done now and you can connect the front USB of the NAS to your PC. In this example we use a Windows 7 PC as client. Go to [control panel -> administrative tools -> computer management -> disk management]. The disk should be listed, it could be listed as unpartitioned space or as a RAW partition.

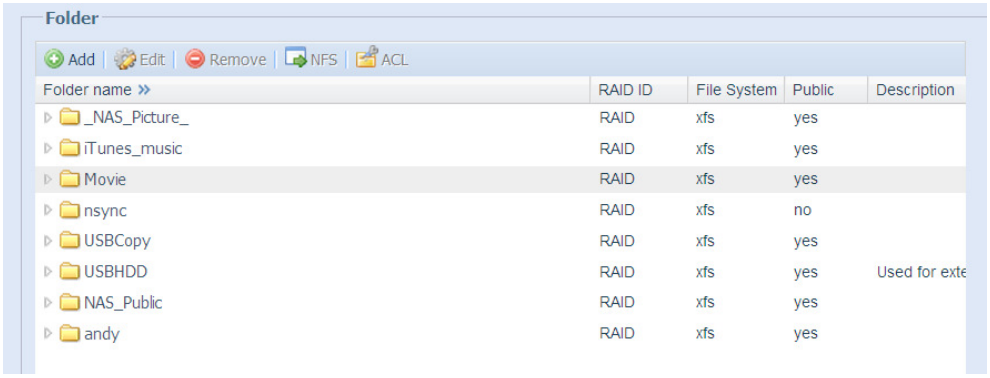




Format the drive as NTFS and assign a drive letter to it. Once the format is done the partition should show up in your Windows explorer.

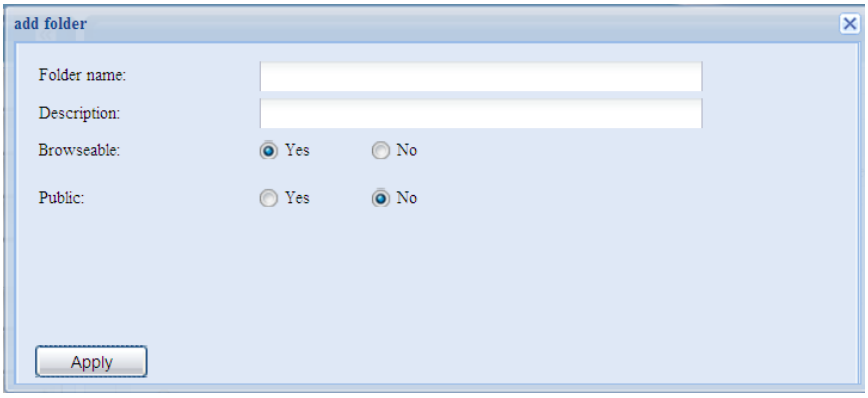
Share Folder

From the **Storage** menu, choose **Share *Folder***, and the **Folder** screen appears. This screen allows you to create and configure folders on the Thecus IP storage volume.



Adding Folders

On the **Folder** screen, press the ***Add*** button and the **Add Folder** screen appears. This screen allows you to add a folder. After entering the information, press ***Apply*** to create new folder.

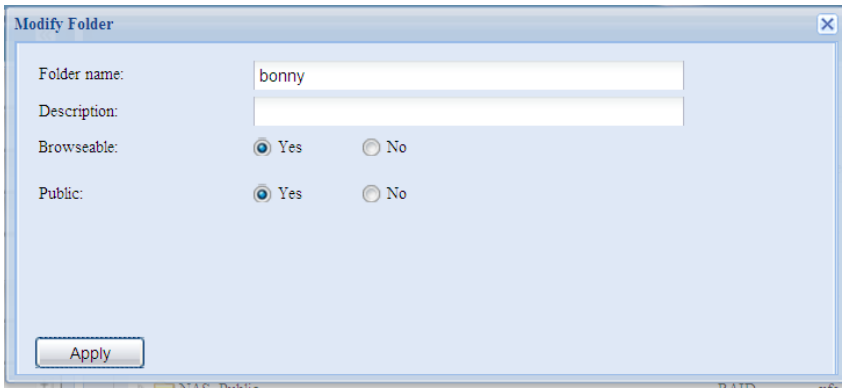


Add Folder	
Item	**Description**
RAID ID	RAID volume where the new folder will reside.
Folder Name	Enter the name of the folder.
Description	Provide a description the folder.
Browseable	Enable or disable users from browsing the folder contents. If **Yes** is selected, then the share folder will be browseable.
Public	Admit or deny public access to this folder. If **Yes** is selected, then users do not need to have access permission to write to this folder. When accessing a public folder via FTP, the behavior is similar to anonymous FTP. Anonymous users can upload/download a file to the folder, but they cannot delete a file from the folder.
Apply	Press ***Apply*** to create the folder.

NOTE Folder names are limited to 60 characters. Systems running Windows 98 or earlier may not support file names longer than 15 characters.

Modify Folders

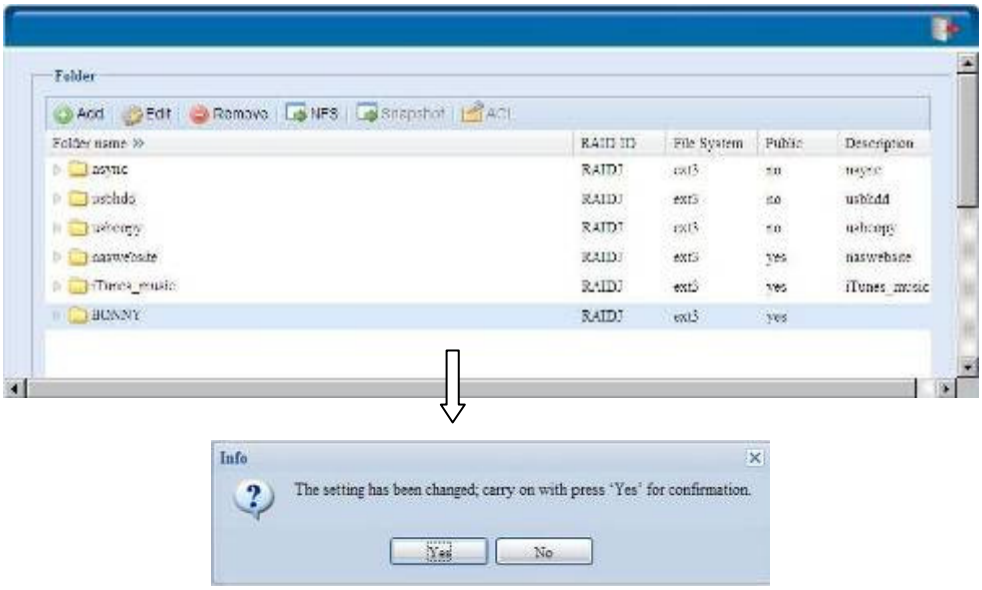
On the **Folder** screen, press the ***Edit*** button and the **Modify Folder** screen appears. This screen allows you to change folder information. After entering the information, press **Apply** to save your changes.



Modify Folder	
Item	**Description**
RAID ID	RAID volume where the folder will reside.
Folder Name	Enter the name of the folder.
Description	Provide a description the folder.
Browseable	Enable or disable users from browsing the folder contents. This setting will only apply while access via SMB/CIFS and web disk.
Public	Admit or deny public access to this folder.

Remove Folders

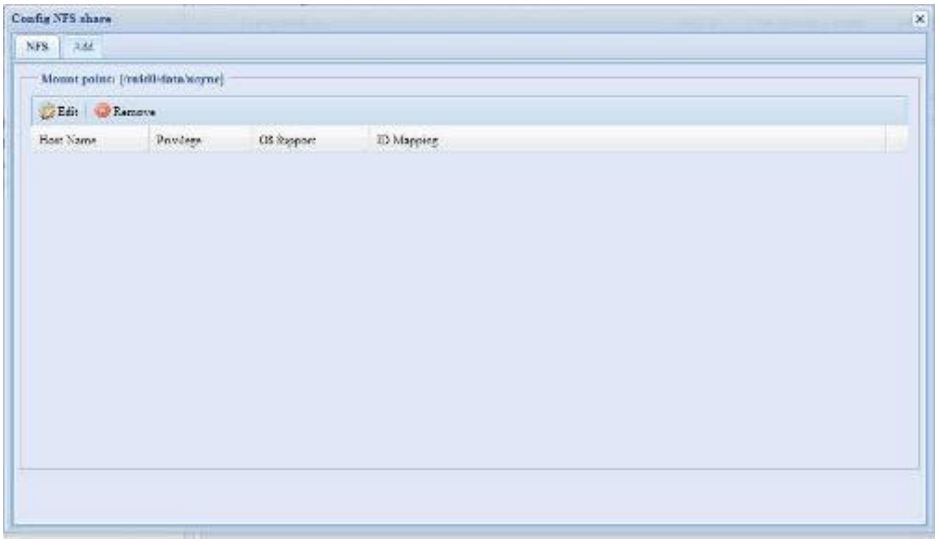
To remove a folder, press the ***Remove*** button from the specified folder row. The system will confirm folder deletion. Press ***Yes*** to delete the folder permanently or ***No*** to go back to the folder list.

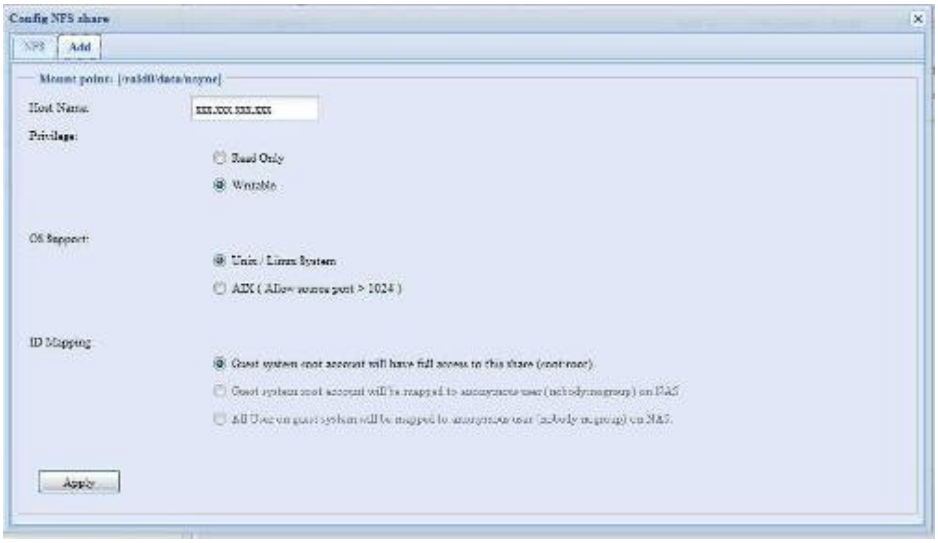


WARNING All the data stored in the folder will be deleted once the folder is deleted. The data will not be recoverable.

NFS Share

To allow NFS access to the share folder, enable the **NFS Service**, and then set up hosts with access rights by clicking ***Add***.



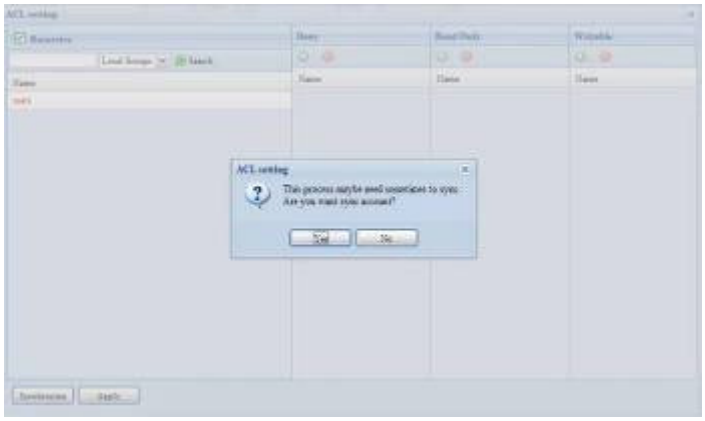


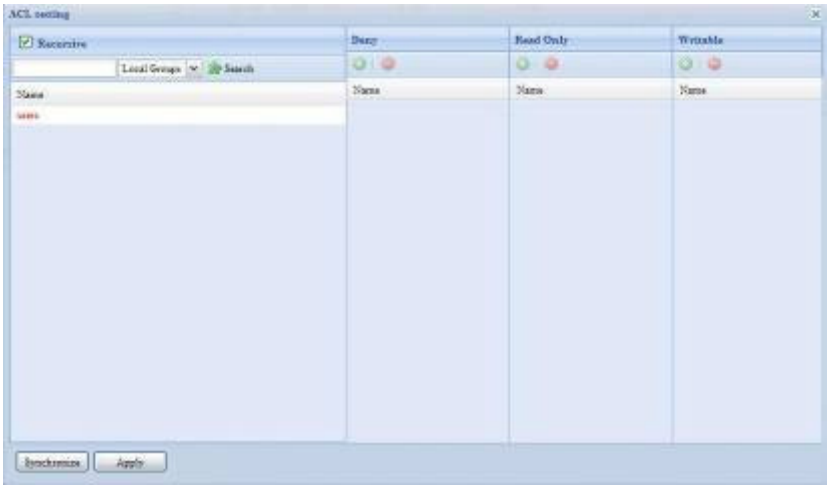
NFS Share	
Item	**Description**
Hostname	Enter the name or IP address of the host
Privilege	Host has either read only or writeable access to the folder.
Guest System Support	There are two selections available: • Unix / Linux System • AIX (Allow source port > 1024) Choose the one which best fits your needs.
IO Mapping	There are three selections available: • Guest system root account will have full access to this share (root:root). • Guest system root account will be mapped to anonymous user (nobody:nogroup) on NAS. • All user on guest system will be mapped to anonymous user (nobody:nogroup) on NAS.

	Choose the one which best fits your needs.
Apply	Click to save your changes.

Folder and Sub-Folder Access Control List (ACL)

On the Folder screen, press the ***ACL*** button, and the **ACL setting** screen appears. This screen allows you to configure access to the specific folder and sub-folders for users and groups. Select a user or a group from the left hand column and then choose ***Deny***, ***Read Only***, or ***Writable*** to configure their access level. Press the ***Apply*** button to confirm your settings.





ACL setting	
Item	**Description**
Deny	Denies access to users or groups who are displayed in this column.
Read Only	Provides Read Only access to users or groups who are displayed in this column.
Writable	Provides Write access to users or groups who are displayed in this column.
Recursive	Enable to inherit the access right for all its sub-folders.

To configure folder access, follow the steps below:

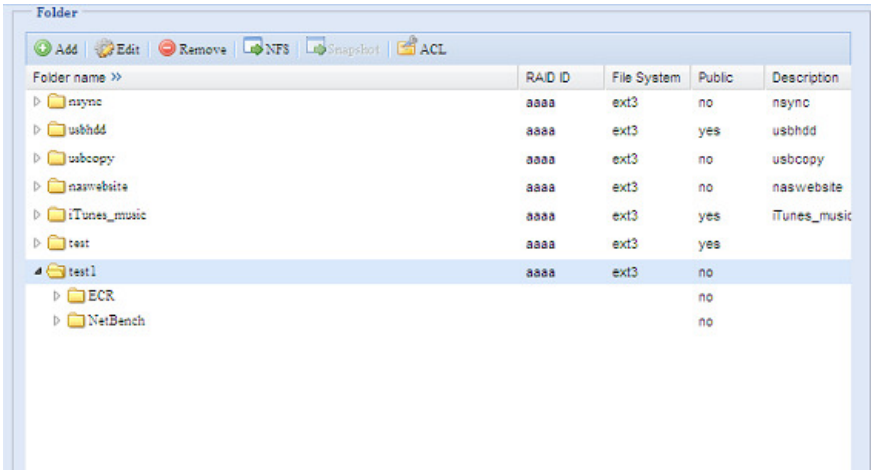
1. On the **ACL** screen, all network groups and users are listed in the left hand column. Select a group or user from this list.

2. With the group or user selected, press one of the buttons from the three access level columns at the top. The group or user then appears in that column and has that level of access to the folder.

3. Continue selecting groups and users and assigning them access levels using the column buttons.
4. To remove a group or user from an access level column, press the ***Remove*** button in that column.
5. When you are finished, press ***Apply*** to confirm your ACL settings.

NOTE If one user has belonged to more than one group but different privilege than the priority Deny > Read Only > Writable

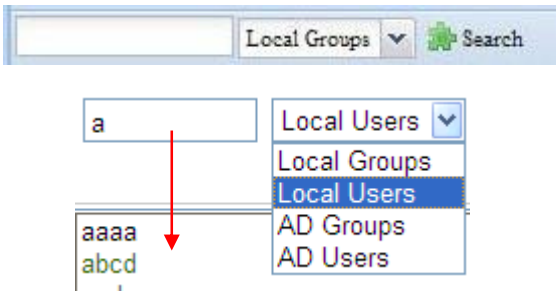
To setup sub-folders ACL, click on " ▷ " symbol to extract sub folders list as screen shot shows below. You may carry on with same steps as share level ACL setting.



NOTE The ACL can be set for share and sub-folders level, not for files.

The ACL screen also allows you to search for a particular user. To do this, follow the steps below:

1. In the blank, enter the name of the user you would like to find.
2. From the drop down select the group you would like to search for the user in.
3. Click ***Search***.



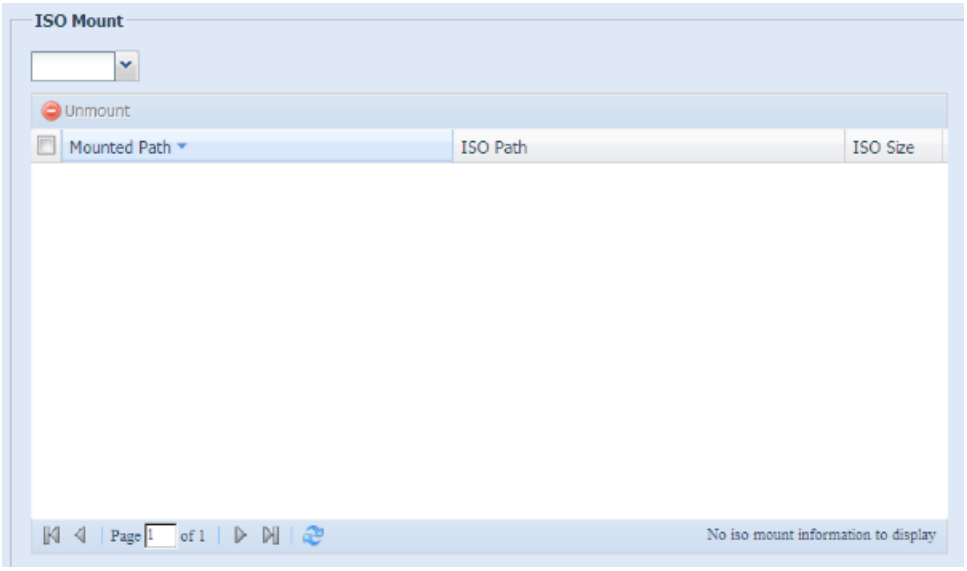
NOTE The system will list up to 1,000 users from the chosen category. To narrow your search, enter a search term in the blank provided.

ISO Mount

The ISO Mount feature is very useful tool from Thecus products. With it, users can mount an ISO file and having export name to display all details from mounted ISO file.

From the main menu, the ISO Mount feature is located under "Storage". Please refer the figure below for reference.

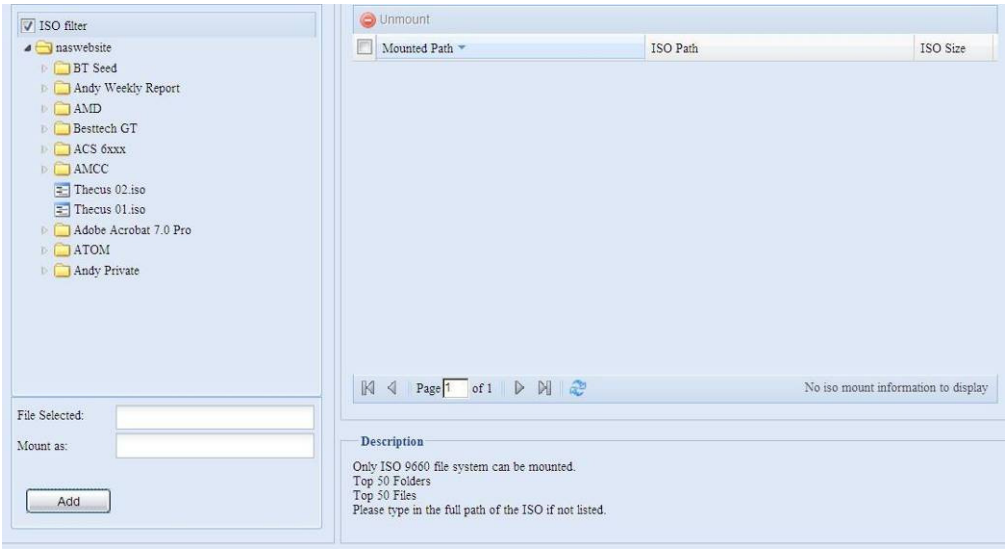
Select on the ISO mount function and you will have the screen shot appear as following.

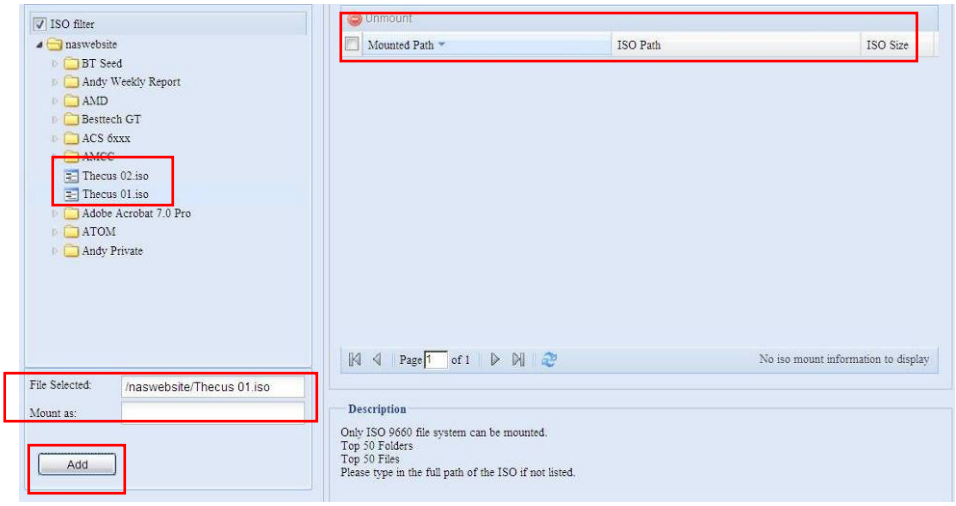


A. *Add a ISO file*

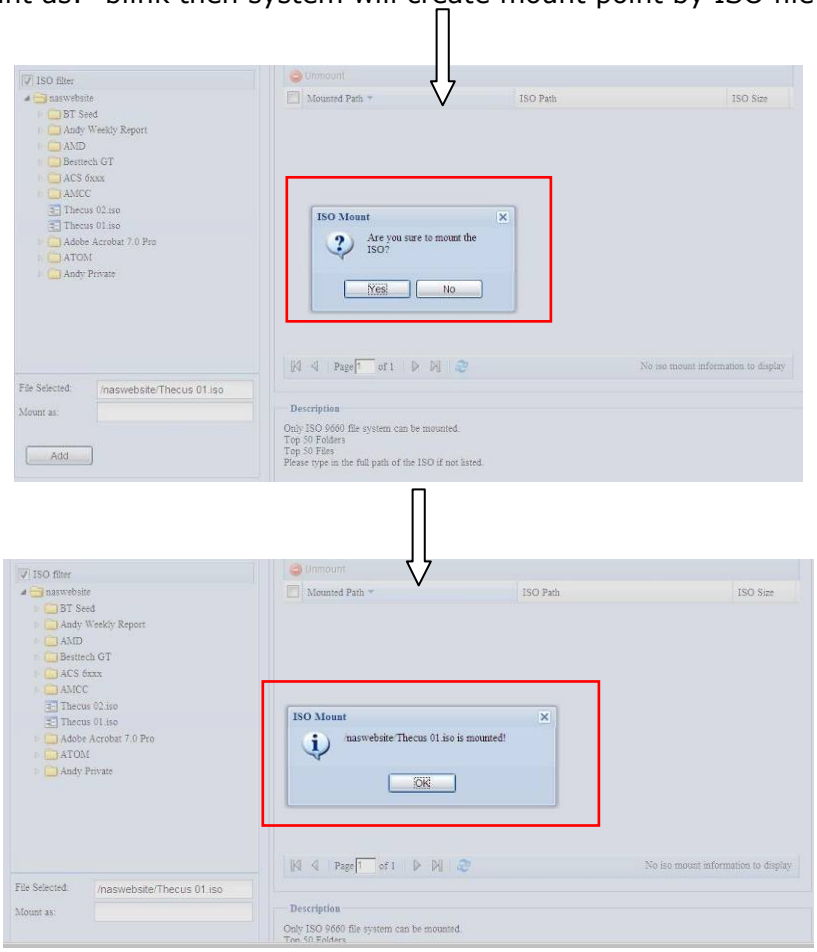
From the figure above, select ISO file from drop down share list.

After selection, system will bring up Mount table for further setting screen.

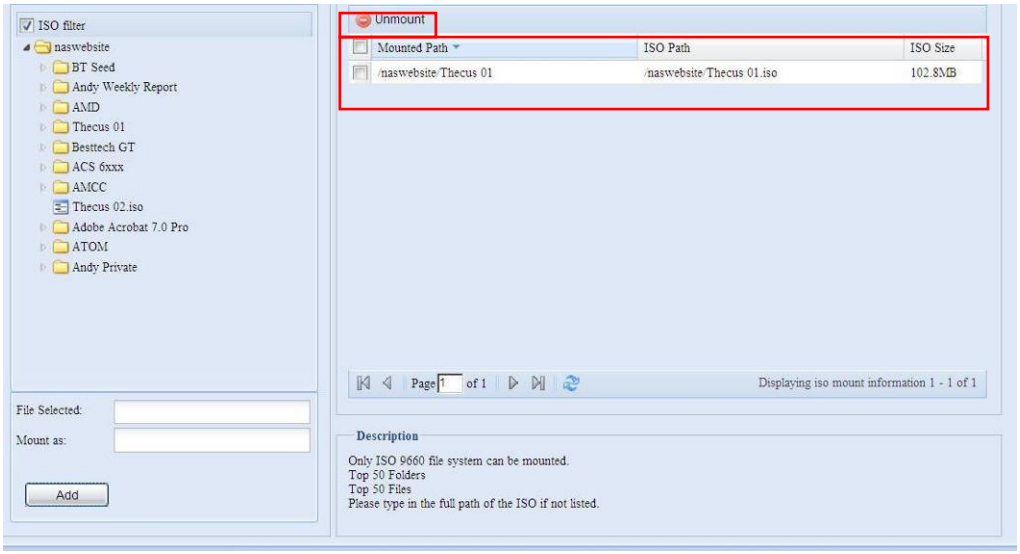




To mount new ISO file, select from listed ISO file and input desired mounting name into "Mount as:" field. Click "ADD" with confirmation to complete mounting ISO file. Or without "Mount as" ISO file export name input, system will automatic to give the export name by ISO file name.
If left "Mount as:" blink then system will create mount point by ISO file name.



After you have completed to add ISO then the page will displayed all mounted ISO files,

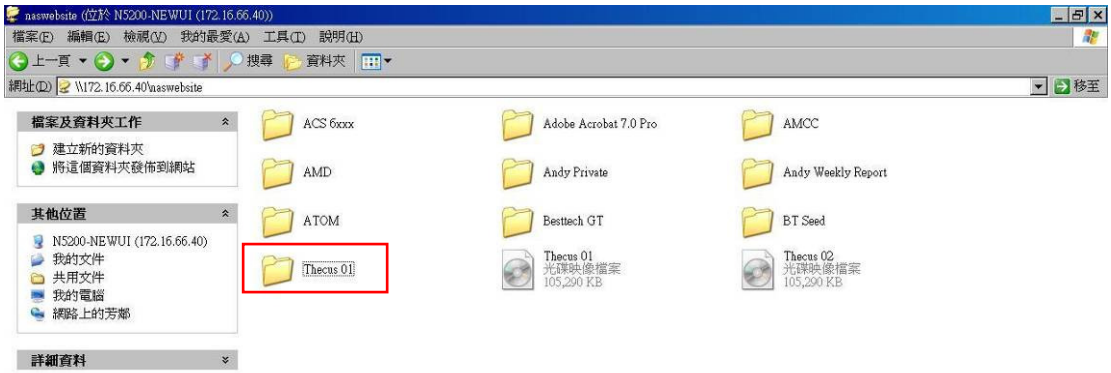


You could click "Unmount" to eliminate mounted ISO file.

B. *Using ISO*

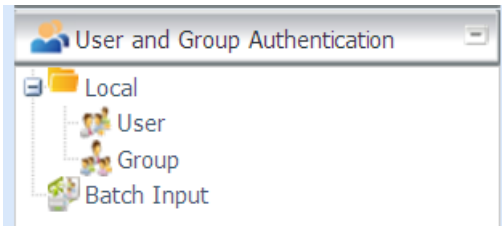
The mounted ISO file will be located same share folder with name giving. Please refer the screen shot below.

ISO file "image" has mounted as folder "Image" you could see. The ISO file "Thecus 01" without assign mounting name, system automatically has folder "Thecus 01" created.



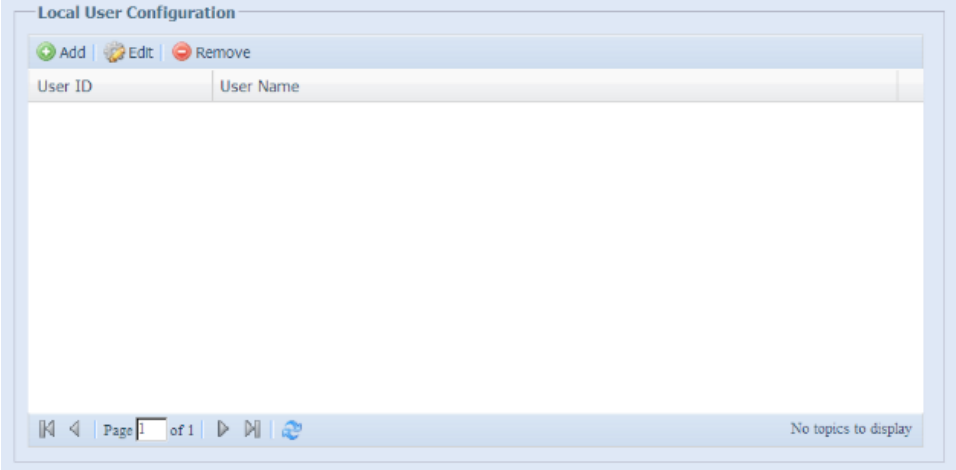
User and Group Authentication

The Thecus IP storage has built-in user database that allows administrators to manage user access using different group policies. From the **User and Group Authentication** menu, you can create, modify, and delete users, and assign them to groups that you designate.



Local User Configuration

From the **Accounts** menu, choose the **User** item, and the **Local User Configuration** screen appears. This screen allows you to **Add**, **Edit**, and **Remove** local users.



Local User Configuration	
Item	**Description**
Add	Press the ***Add*** button to add a user to the list of local users.
Edit	Press the ***Edit*** button to modify a local user.
Remove	Press the ***Remove*** button to delete a selected user from the system.

- **Add Users**

1. Click on the ***Add*** button on **Local User Configuration** screen, and **Local User Setting** screen appears.

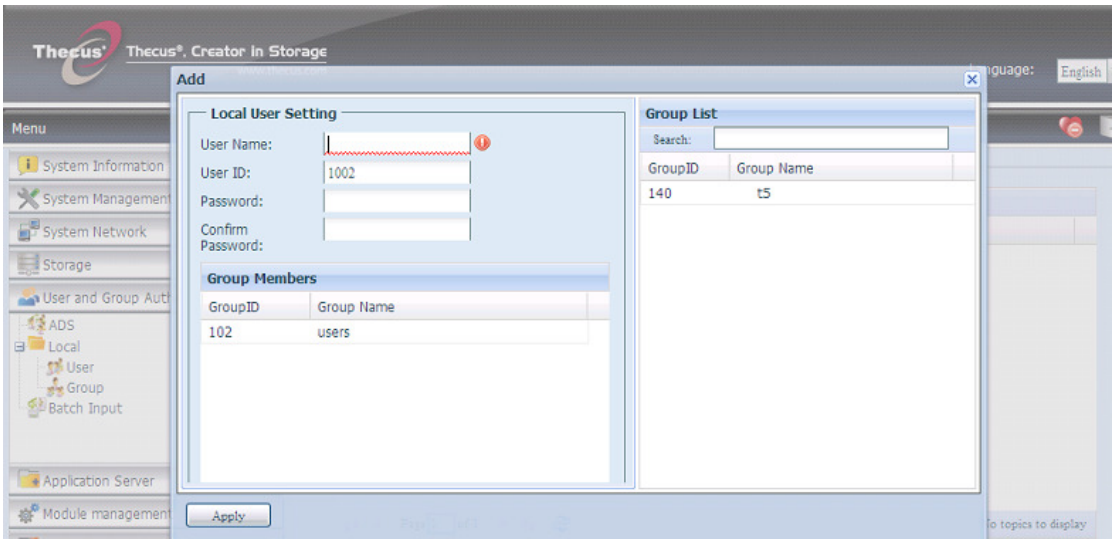
2. On the **Local User Setting** screen, enter a name in the **User Name** box.

3. Enter a **User ID** number. If left blank, the system will automatically assign one.

4. Enter a password in the **Password** box and re-enter the password in the **Confirm** box.

5. Select which group the user will belong to. **Group Members** is a list of groups this user belongs to. **Group List** is a list of groups this user does not belong to. Use the **<<** or **>>** buttons to have this user join or leave a group.

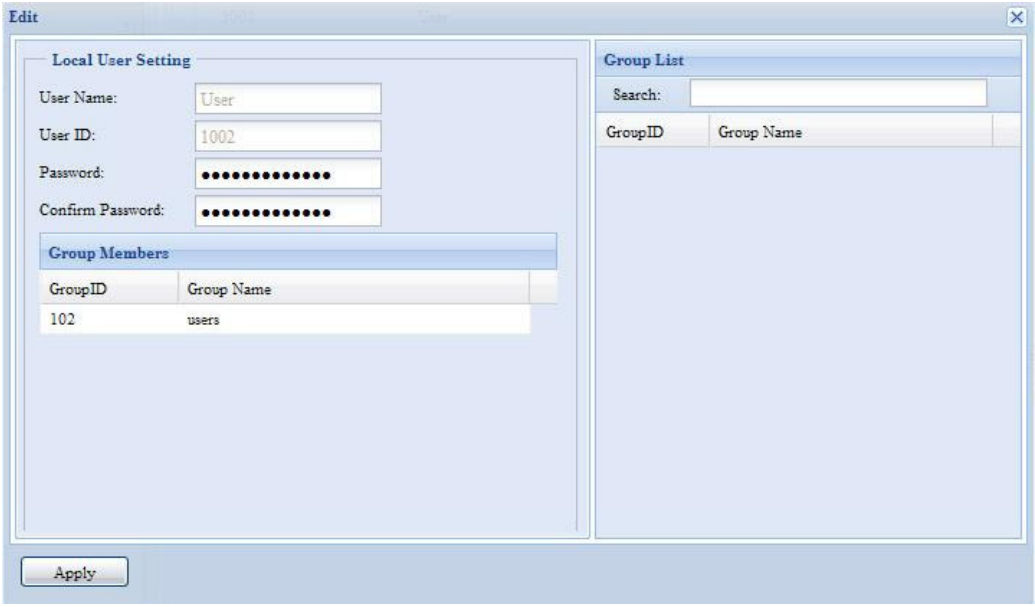
6. Press the ***Apply*** button and the user is created.



NOTE All users are automatically assigned to the 'users' group.

- **Edit Users**

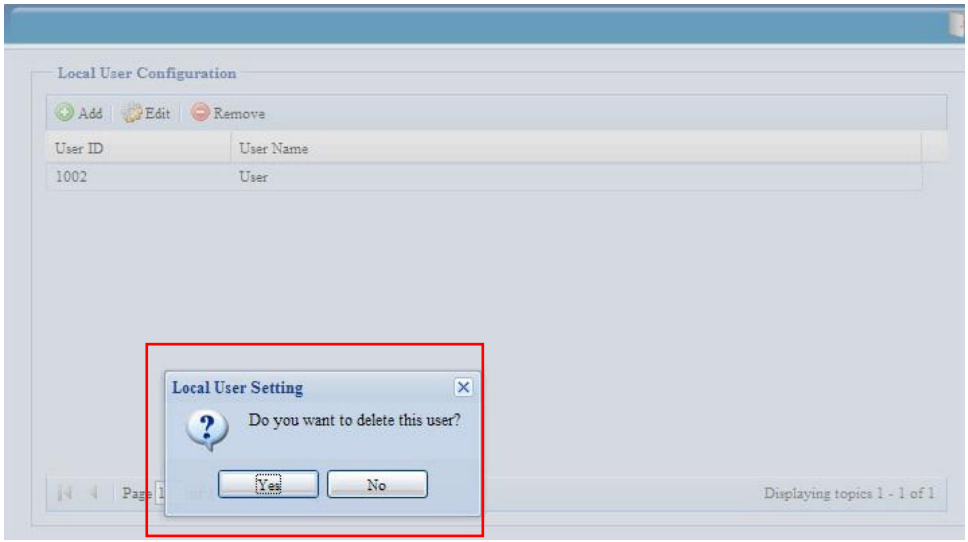
1. Select an existing user from the **Local User Configuration** screen.
2. Click on the ***Edit*** button, and **Local User Setting** screen appears.
3. From here, you can enter a new password and re-enter to confirm, or use the **<<** or **>>** buttons to have this user join or leave a group. Click the ***Apply*** button to save your changes.



Remove Users

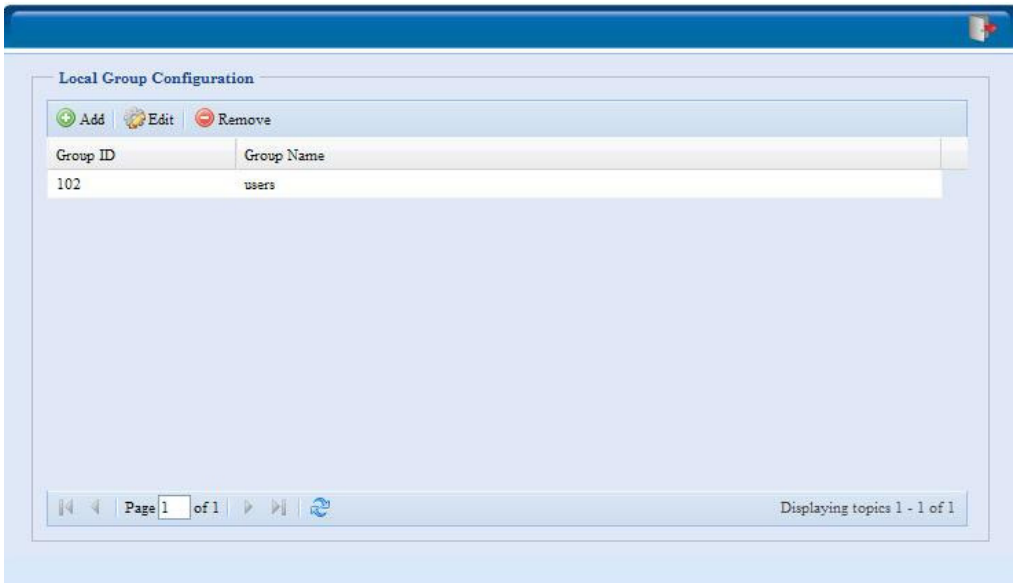
1. Select an existing user from the **Local User Configuration** screen.

2. Click on ***Remove*** button and the user is deleted from the system.



Local Group Configuration

From the **Accounts** menu, choose the ***Group*** item, and the **Local Group Configuration** screen appears. This screen allows you to **Add**, **Edit**, and **Remove** local groups.

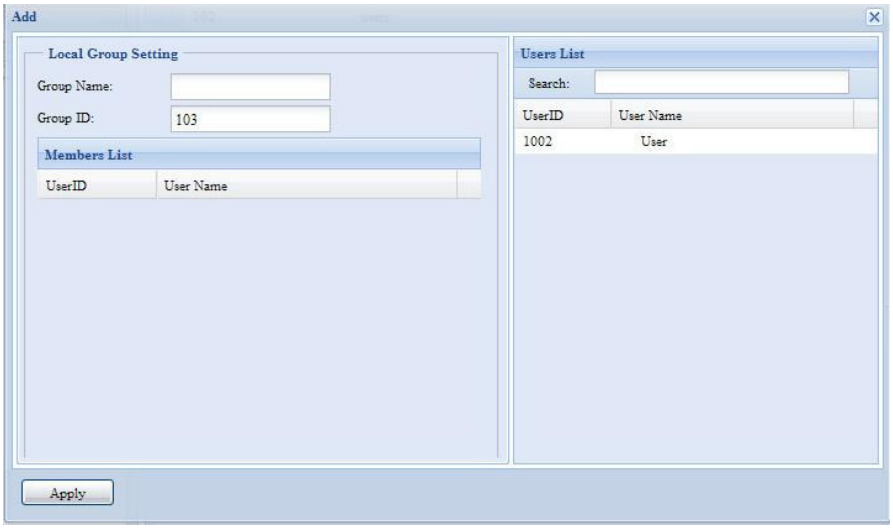


Local Group Configuration	
Item	**Description**
Add	Press the ***Add*** button to add a user to the list of local groups.
Edit	Press the ***Edit*** button to modify a selected group from the system.
Remove	Press the **Remove** button to delete a selected group from the system.

Add Groups

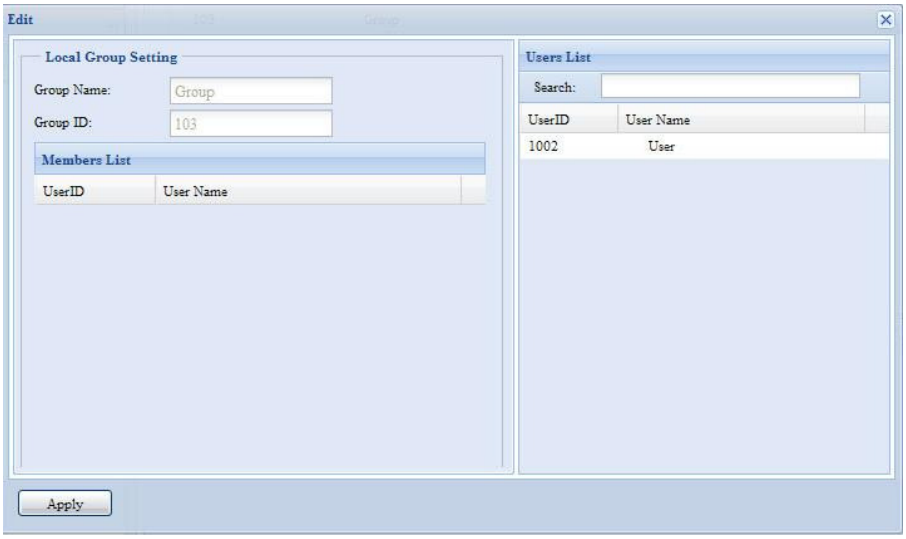
1. On the **Local Group Configuration** screen, click on the ***Add*** button.
2. The **Local Group Setting** screen appears.
3. Enter a **Group Name**.

4. Enter a **Group ID** number. If left blank, the system will automatically assign one.
5. Select users to be in this group from the **Users List** by adding them to the **Members List** using the **<<** button.
6. Click the ***Apply*** button to save your changes.



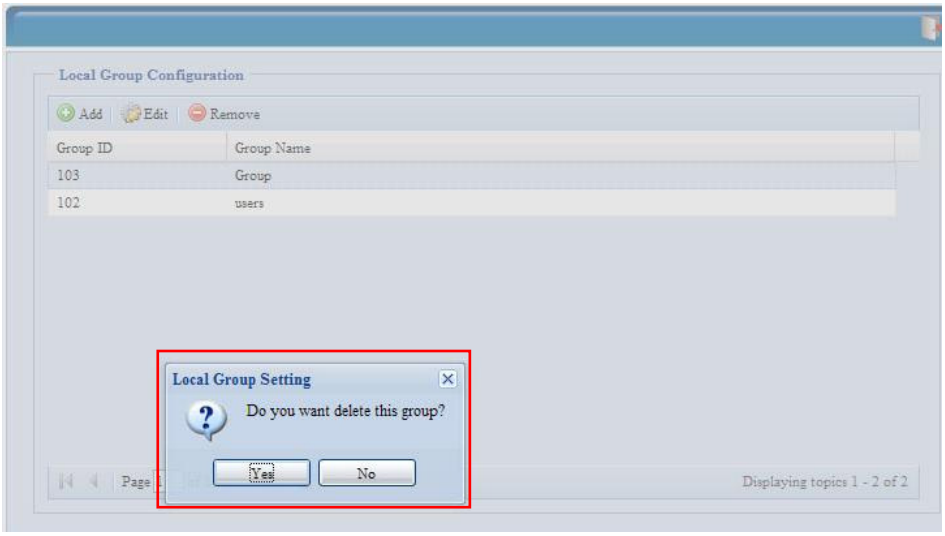
Edit Groups

1. On the **Local Group Configuration** screen, select a group name from the list.
2. Press the ***Edit*** button to modify the members in a group.
3. To add a user into a group, select the user from the **Users List**, and press the **<<** button to move the user into the **Members List**.
4. To remove a user from a group, select the user from **Members List**, and press the **>>** button.
5. Click the ***Apply*** button to save your changes.



Remove Groups

1. On the **Local Group Configuration** screen, select a group name from the list.
2. Press ***Remove*** to delete the group from the system.



Batch Create Users and Groups

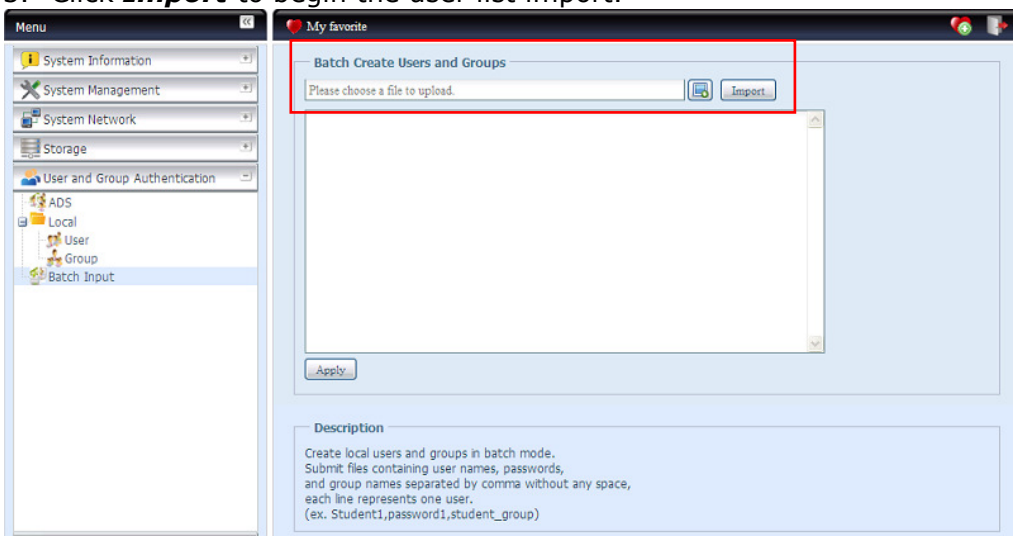
The Thecus IP storage can also add users and groups in batch mode. This enables you to conveniently add numerous users and groups automatically by importing a simple comma-separated plain text (*.txt) file.

From the **Accounts** menu, click ***Batch Mgmt*** and the **Batch Create Users and Groups dialogue** will appear. To import your list of users and groups, follow these steps:

1. Click ***Browse…*** to locate your comma-separated text file.
   The information in the text file should follow this format:

   ```
   [USERNAME], [PASSWORD], [GROUP]
   ```

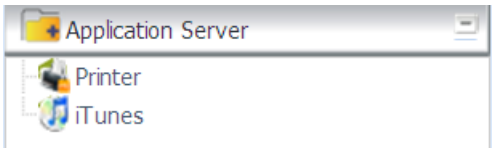
2. Click ***Open***.
3. Click ***Import*** to begin the user list import.



Application Server

The Thecus IP storage supports printer server, and Tunes server. The integrated Print Server allows you to share a single USB printer will all users on the network. The Thecus IP storage provides activating the iTunes Server on the device. You will

be able to play music files on this device with your iTunes client software directly. The following section shows you how.



Printer Information

From the **Application Server** menu, choose the ***Printer*** item, and the **Printer Information** screen appears. This screen provides the following information about the USB printer connected to the USB port.

Printer Information	
Item	**Description**
Manufacturer	Displays the name of the USB printer manufacturer.
Model	Displays the model of the USB printer.
Status	Displays the status of the USB printer.
Remove document from Queue	Click to remove all documents from printer queue
Restart Printer service	Click to restart printer service

If a corrupt print job is sent to a printer, printing may suddenly fail. If your print jobs seem to be locked up, pressing the ***Remove All Documents*** button to clear the print queue may resolve the issue.

You can configure Thecus IP storage to act as a printer server. That way, all PCs connected to the network can utilize the same printer.

Windows XP SP2

To set up the Printer Server in Windows XP SP2, follow the steps below:

1. Connect the USB printer to one of the USB ports (preferably the rear USB ports; front USB ports can be used for external HDD enclosures).
2. Go to ***Start*** > ***Printers and Faxes***.
3. Click on **File** > **Add Printer**.
4. The **Add Printer Wizard** appears on your screen. Click ***Next***.
5. Select the "***A network printer, or a printer attached to another computer***" option.

6. Select "***Connect to a printer on the Internet or on a home or office network***", and enter "**`http://Thecus IP storage IP_ADDRESS:631/printers/usb-printer`**" into the URL field.

7. Your Windows system will ask you to install drivers for your printer. Select correct driver for your printer.

8. Your Windows system will ask you if you want to set this printer as "Default Printer". Select ***Yes*** and all your print jobs will be submitted to this printer by default. Click ***Next***.

9. Click ***Finish***.

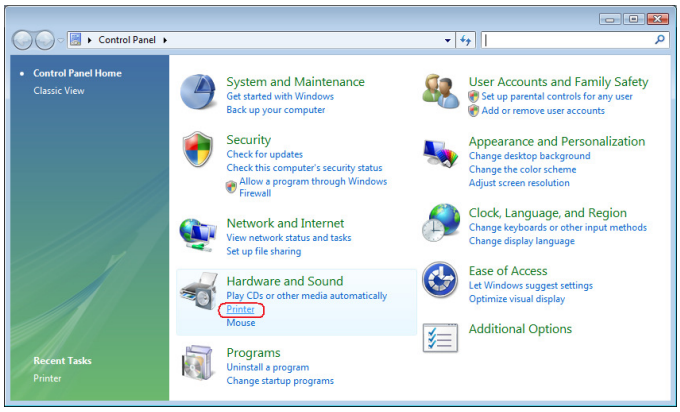
NOTE

- Not all USB printers are supported. Please check Thecus website for a list of supported printers.
- Note that if a multi-function (all-in-one) printer is attached to the Thecus IP storage, usually only the printing and fax functions will work. Other features, such as scanning, will probably not function.

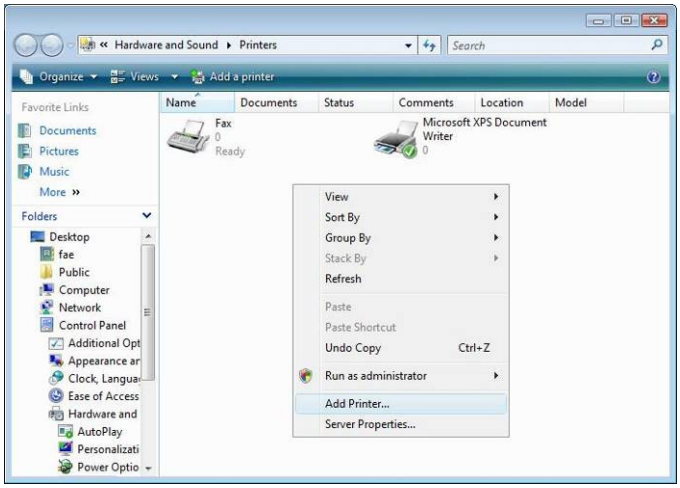
Windows Vista

To set up the Printer Server in Windows Vista, follow the steps below:

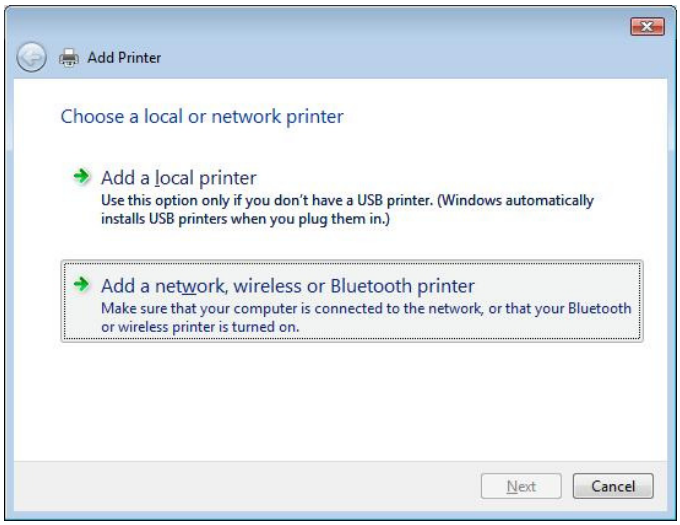
1. Open ***Printer Folder*** from the **Control Panel**.



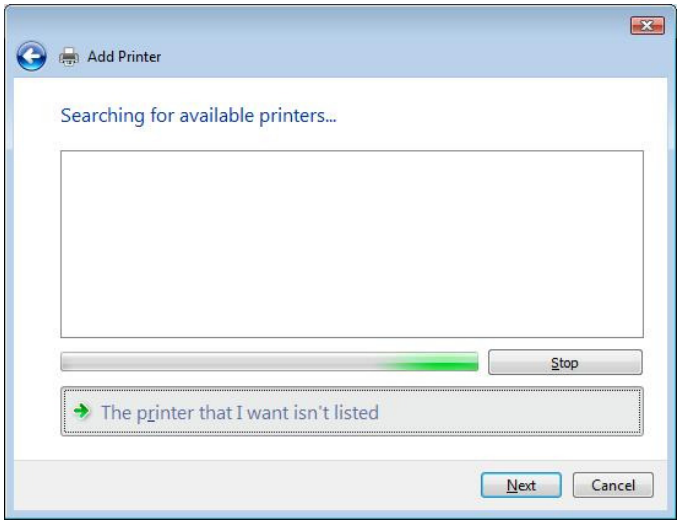
2. Click the right mouse button in anywhere on the **Printers** folder and then select ***Add Printer***.



3. Select ***Add a network, wireless or Bluetooth printer***.

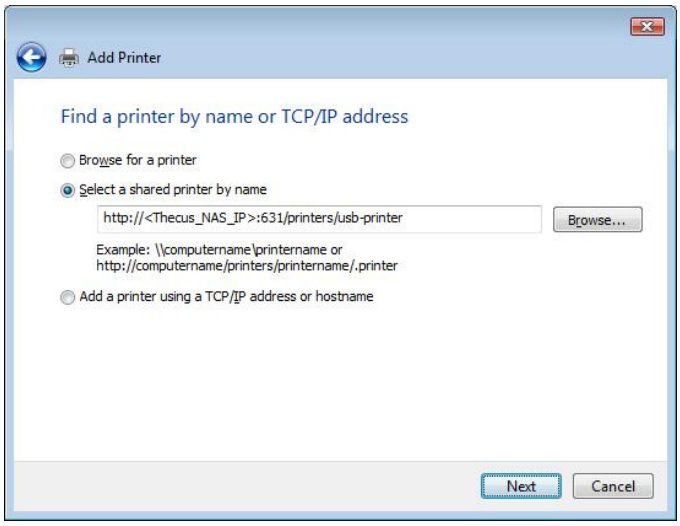

Add Printer
Choose a local or network printer
Add a local printer
Use this option only if you don't have a USB printer. (Windows automatically installs USB printers when you plug them in.)
Add a network, wireless or Bluetooth printer
Make sure that your computer is connected to the network, or that your Bluetooth or wireless printer is turned on.
Next
Cancel

4. Select ***The printer that I want isn't listed***.



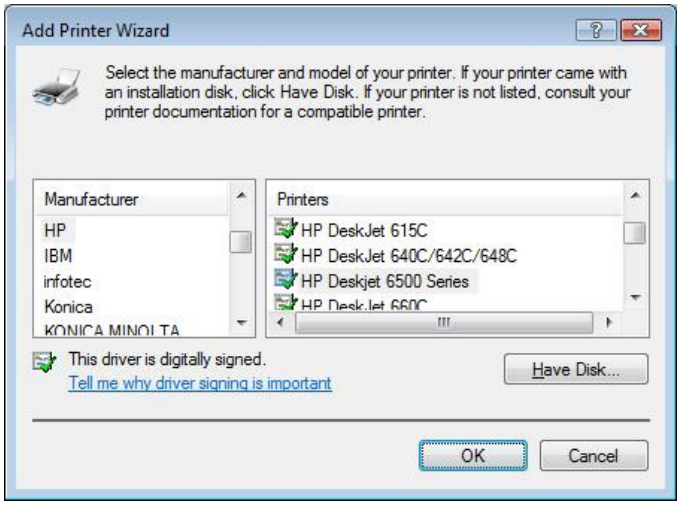
You can press ***The printer that I want isn't listed*** to go into next page without waiting for **Searching for available printers** to finish.

5. Click ***Select a shared printer by name***.



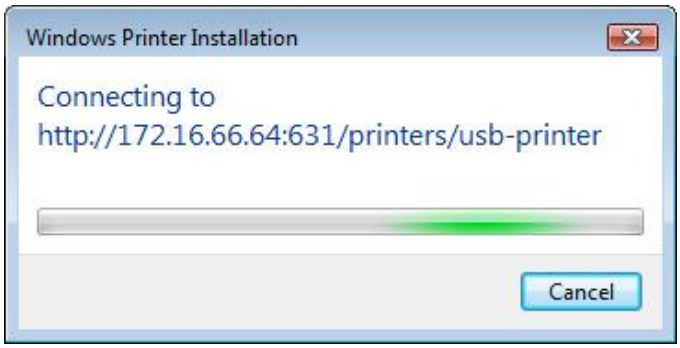
Type `http://<Thecus_NAS>:631/printers/usb-printer` in the box, where `<Thecus_NAS_IP>` is the IP address of Thecus IP storage. Click ***Next***.

6. Select or install a printer and then press ***OK***.

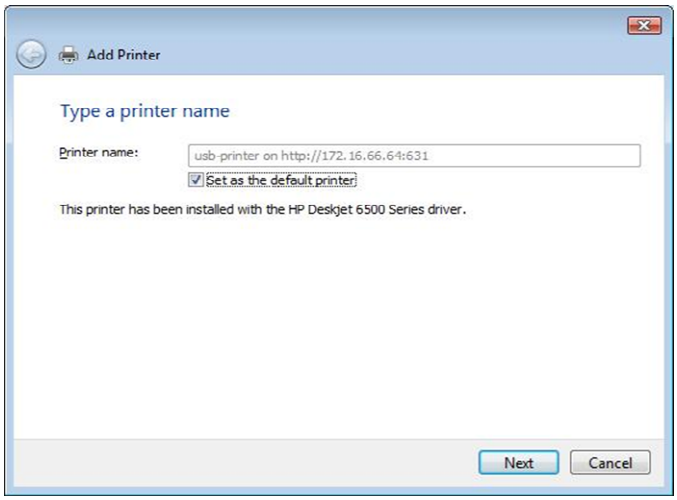

Add Printer Wizard
Select the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for a compatible printer.
Manufacturer
HP
IBM
infotec
Konica
Printers
HP DeskJet 615C
HP DeskJet 640C/642C/648C
HP Deskjet 6500 Series
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
OK
Cancel

If your printer model is not listed, please contact your printer manufacturer for help.

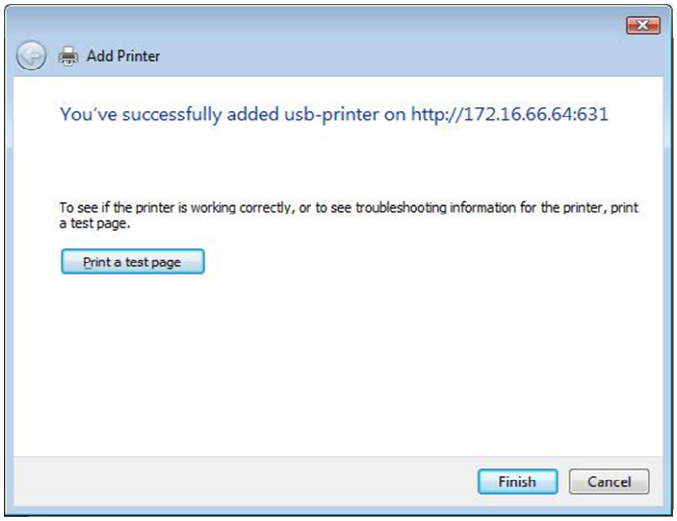
7. Windows will attempt to connect to the printer.



8. You can choose to set this printer as the default printer by checking the ***Set as the default printer*** box. Click ***Next*** to continue.



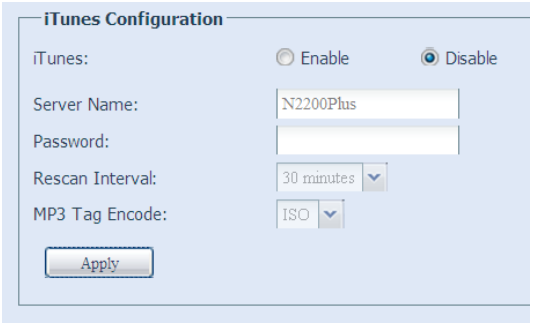
9. Done! Click ***Finish***.


Add Printer
You've successfully added usb-printer on http://172.16.66.64:631
To see if the printer is working correctly, or to see troubleshooting information for the printer, print a test page.
Print a test page
Finish
Cancel

iTunes® Server

With the built-in iTunes server capability, Thecus IP storage enables digital music to be shared and played anywhere on the network!

From the **Network** menu, choose the ***iTunes*** item, and the **iTunes Configuration** screen appears. You may enable or disable the iTunes Service from here. Once enabled, enter correct information for each field and press ***Apply*** to save your changes.



See the following table for detailed descriptions of each field:

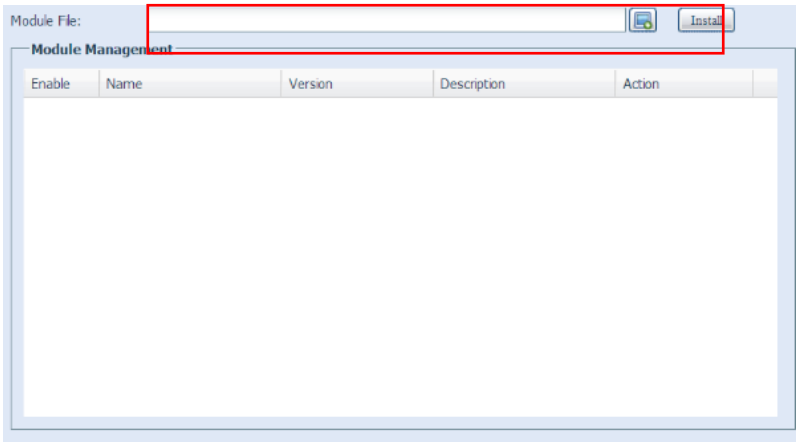
iTunes Configuration	
Item	**Description**
iTunes	Enable or disable the iTunes Service.
Server Name	Name used to identify Thecus IP storage to iTunes clients.
Password	Enter password to control access to your iTunes music.
Rescan Interval	Rescan interval in seconds.
MP3 Tag Encode	Specify tag encoding for MP3 files stored in Thecus IP storage. All ID3 tags will be sent out in UTF-8 format.

Once the iTunes service is enabled, Thecus IP storage will make all music located in the **Music** folder available for iTunes-equipped computers on the network.

Module Management

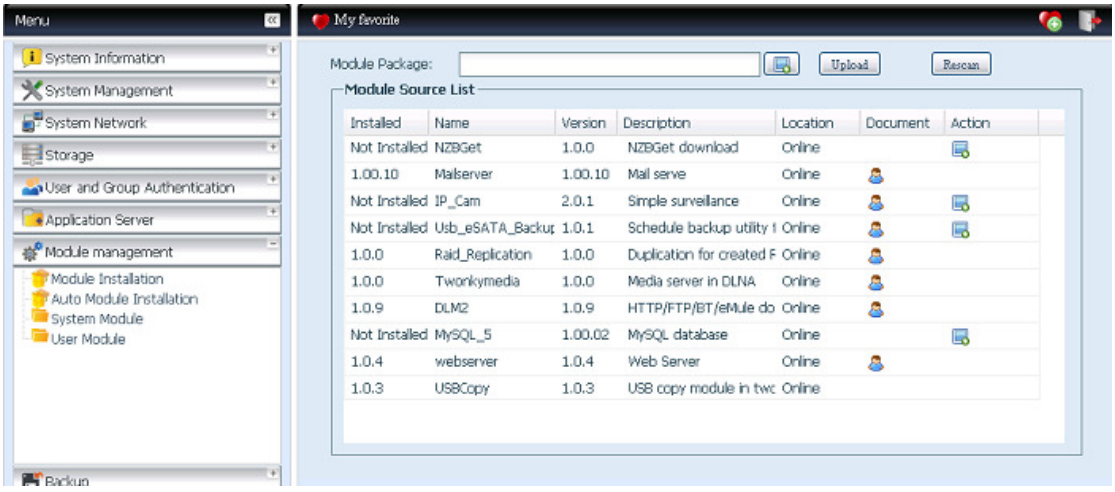
Module Installation

From the **Module Management** menu, choose the ***Module Installation*** item and the **Module Management** screen appears. From here, you can install separate software modules to extend the functionality of your Thecus IP storage.



Auto Module Installation

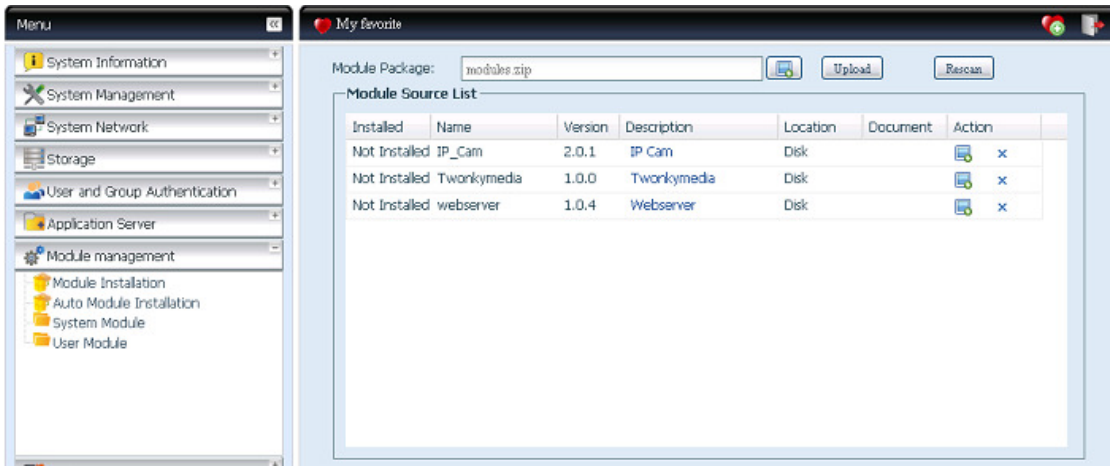
Or choose the ***Auto Module Installation*** item and the **available system Module** screen appears. The default to get module list is "On-line" so if Thecus IP storage is capable to connect to Internet then it will automatically link to Thecus official website then list available modules. Please refer the screen shot below.



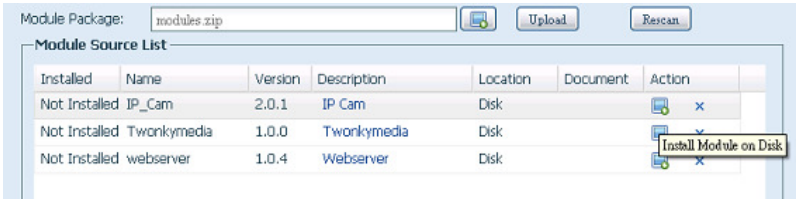
The other way to have auto module installed is using universal CD shipped with system. It has contained file "modules.zip" which included all modules while system shipped. Please refer the screenshot below.

NOTE

The modules list getting on-line of Thecus website will newly than "thecus.zip" from shipped CD. But the installation from Thecus website could have unpredictable duration due to bandwidth concern.



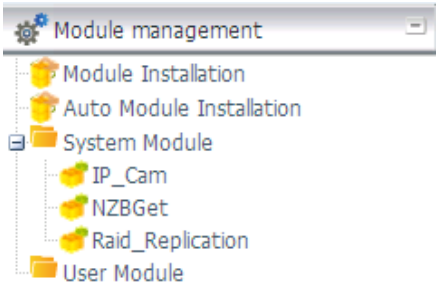
Auto Module Source List	
Item	**Description**
Installed	Status of module
Name	Module name
Version	The version of released version
Description	The description of module
Location	The module is either getting on-line or disk
Document	The available documentation of module
Action	To install module or deleted p.s. If module list from on-line, then no delete option available
Rescan	Click to rescan from both on-line and disk



After click on "Action" to install module, the module will be under list of Module Installation. Please do "Enable" to activate module usage.

System Module

The system module is officially provided by Thecus for new features added. The module will list once it has been enabled from "Module Installation".



- **User Module**

The user module is reserved for Thecus fans to build up 3rd party functions in the future.

Backup

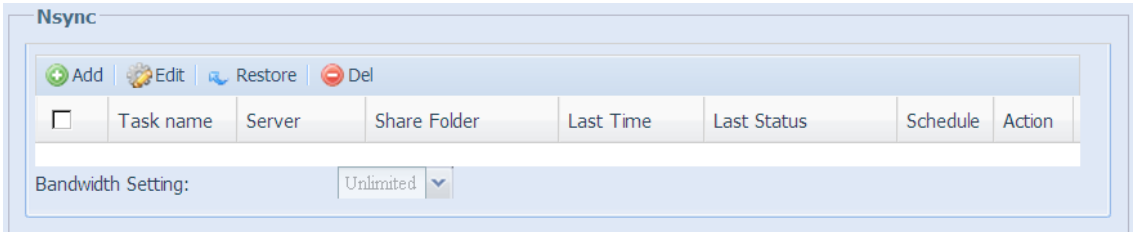
There is a way to back up data with the Thecus IP storage.

Nsync(Rsync for N2200EVO/N4100EVO)

You can backup a share folder to another Native Rsync Server for safe keeping as long as you have appropriate access right on that target.

If the files on your Thecus IP storage are lost for any reason, you can restore those files from the target Native Rsync Server. To backup files regularly, you can set up a scheduled task to run only once, daily, weekly, or monthly.

Under the **Backup** menu, click ***Nsync*** and the **Nsync** window appears.

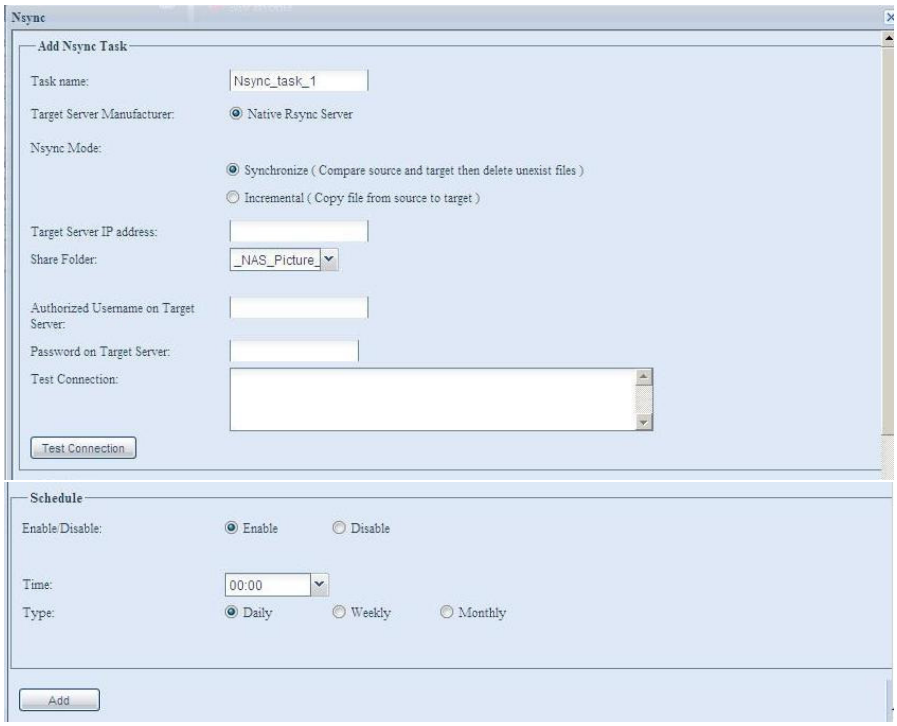


Below is a description of each field:

Nsync	
Item	**Description**
Add	Click to add a Nsync task
Edit	Click to Edit an Nsync task.
Restore	Restore share folder from an Nsync target.
Del	Click to delete an Nsync task. Backup files on Nsync target is also deleted.
Task name	The name of your Nsync task.
Server	The IP address of your target server
Share folder	The share folder you would want to backup.
Last Time	The time when the last Nsync task was executed.
Last Status	The status of your last Nsync task.
Schedule	Schedule backup of your share folders.
Action	Administrator can run or stop an Nsync task by pressing the action button.

Add Nsync Task

From the **Nsync** screen, click ***Add*** to display the **Add Nsync Task** screen.



Add Nsync Task	
Item	**Description**
Task Name	The name of your Nsync task.
Target Server Manufacturer	Select replication to method, it has 1 options can choose from. Native Rsync Server: Using rsync to replicate data to other Thecus IP storage
Nsync Mode	Synchronize mode or Incremental mode .
Target Server IP Address	The IP address of your target server.
Source Folder	The share folder you want to backup.
Authorized Username on Target Server	The account name on the target server.
Password on Target Server	The password for the username on the target server.
Test Connection	Click to check the connection to the Target Server.
Schedule	Enable or Disable schedule backup of your share folders.
Time	The time when the Nsync task will run.
Type	Select whether to run the Nsync task daily, weekly, or monthly. **Daily**: input the time of day to execute Nsync task. **Weekly**: input which day of the week to execute the task. **Monthly**: decide which day of the month to execute the task.
Add	Press **Add** to submit your settings.

NOTE Before starting an Nsync Task, make sure the target server's Nsync Server is enabled.

NOTE Using "Native Rsync Server" to backup data to other Thecus NAS devices needs to enable target server and setup a valid username and password to grant access permission.

Setting Up an Nsync Target on an Thecus IP storage Nsync Device

On the Nsync target server, the administrator of that server has to set up a user account with a folder named "nsync" and grant write access.

1. On the Nsync server, add a user for Nsync source (ex. nsyncsource1). For instructions on how to add a user on the Thecus IP storage, see **Chapter 4: User and Groups Authentication> Local User Configuration > Add Users**.

2. On the Nsync server, grant that user (ex. nsyncsource1) write access to the **nsync** folder. For instructions on how to set up a folder's ACL, see **Chapter 4: Storage management> Shore Folder> Folder Access Control List (ACL)**.

3. Once this is done, the target server will start accepting Nsync tasks from server using that ID and password.

• *Setting Up an Nsync Target on another Device other than Thecus IP storage*

If you selected "Legacy FTP Server" when setting up your Nsync task, the Thecus IP storage will use the FTP protocol to back up the share folder. On the external storage device, make sure there is a folder named "nsync", and the Auth ID has writable permission in that folder.

• *Designating Thecus IP storage as an Nsync Target*

The Thecus IP storage can act as an Nsync server, enabling another Nsync-equipped Thecus NAS at a remote location backup their files to this Thecus IP storage. From the **System Network** menu, choose the ***Nsync Target*** item, and the **Nsync Target Server** screen appears.

Nsync Target Server Setting	
Item	**Description**
Nsync Target Server	Enable or Disable Nsync Target support.

NOTE

To enable Nsync task to go thru firewall, you have to open port TCP/1194 on your firewall in both directions.

Chapter 5: Using Thecus IP Storage

Overview

Once the Thecus IP storage is setup and operating, users on the network may manage all varieties of digital music, photos, or files by simply using their web browsers. To manage your personal files or access public files on the Thecus IP storage, just enter its IP address into your browser (default IP address is `http://192.168.1.100`), and you will be taken to the **Thecus IP storage Login** page.

NOTE

Before proceeding, make sure that WebDisk Support or Secure WebDisk Support is enabled in the Service Support screen in the system's **Network** menu. See Service Support in Chapter 4: System Network >HTTP/Web Disk.

Login Page

To login to the system, enter your user name and password, and select Web Disk or Photo server then click ***Login*** to log into the system. You will be taken to the **selected** interface.

Using WebDisk

(Does not apply to the N2200EVO/N4100EVO' Web Disk)

The Thecus IP storage provides a WebDisk function that allows you to access the system over the Internet from any browser.

1. In the Login page, type in the User ID and password that were previously set for you in the Accounts menu. See **Chapter 4:User and Group Authentication > Local User Configuration**.

2. The WebDisk page appears showing folders made currently available to you via the **Access Control List (ACL)**.

3. Click on a folder name to enter the folder.

4. The folder's page appears displaying files and folders. Click on a file to download the file.
5. Buttons on the folder page allow you to create a new folder, upload files and delete files in the folder.

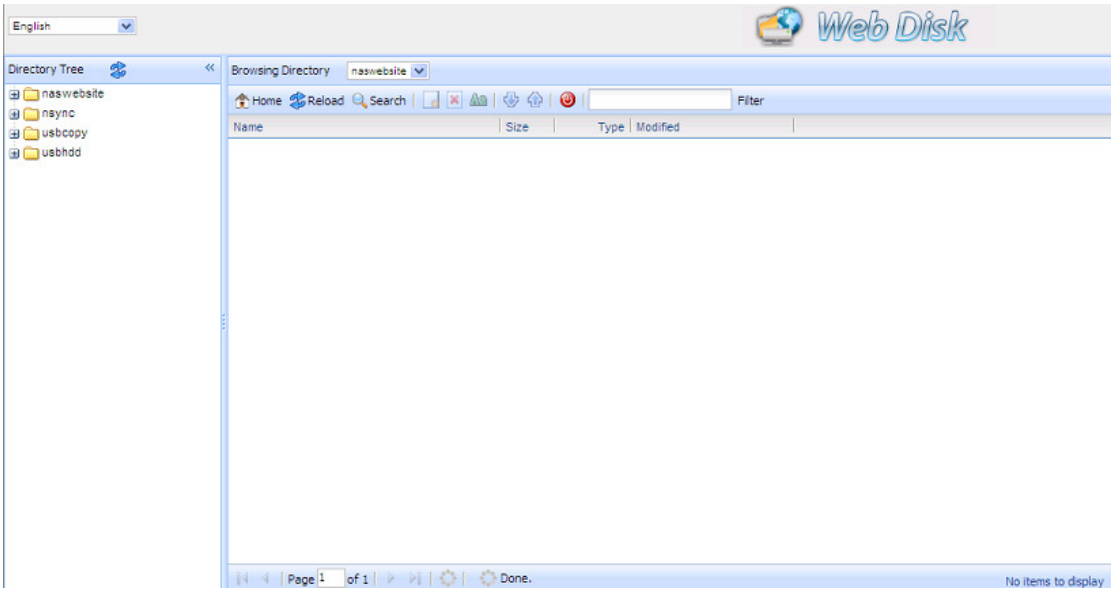
6. To create a new folder within the current folder, press the New folder button. When the screen appears enter a name for the folder. Press OK to create the folder.

7. To upload a file from your computer to the current folder, press the New file (upload) button. When the screen appears, press Browse and locate the file to upload. Press **OK** and the file is uploaded to the current folder.

8. To delete a file or folder, select the file or folder's check box. Press the Delete selected items button. You can also check the check box as the red circle indicates to select all files and folders in this folder.

To access folders with access control, you must first login with a local user account.

For more information on how to setup user rights to the folders, please check ***Chapter 4: Storage Management >Share Folder > Folder Access Control List (ACL).***



Folder Page Button	
Button	**Description**
Directory Tree	List all directory trees per login user's privilege.
Browsing Directory	Browsing selected directory of its folders and files.
Home	Go back to the web disk directory layer.
Reload	Re-load the current list.
Search	Search files in the current web disk directory. (Must input the complete file name.)
(new file/Directory)	Creates a new folder or directory.
(delete)	Deletes selected files or folders.
(Rename)	Rename a directory or file.
(download)	Download a file to current folder of your computer.
(upload)	Upload file from your computer to current web disk folder.
(Admin)	Change password and confirm new password.
(logout)	To logout of the web disk interface.
Show Directories	Show the files and folders in the directory.
Filter	Search files in the directory. (You can only input some word string.)
Name	Displays the names of folders and files.
Size	Shows the size of folders and files.
Type	Displays the type of folders and files.

Modified	Shows the time of most recent modification of folders and files.
owner	Owner of the file.

There is also the way by using right click button to bring up contact windows as short cut to operate what you needed.

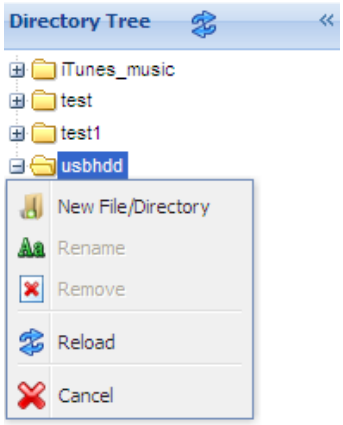


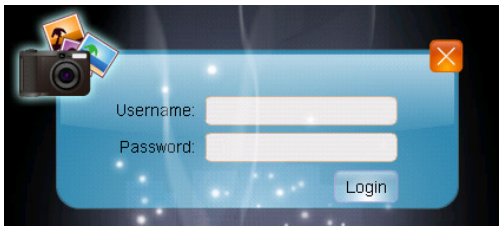
Photo Server

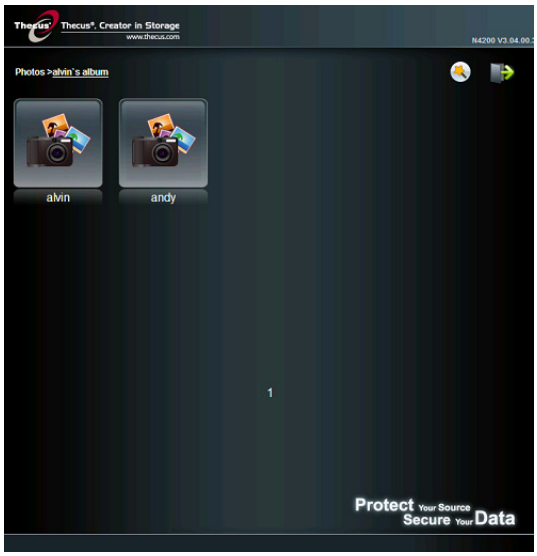
(Does not apply to the N2200EVO/N4100EVO' photo server)

Using the Photo Server, users can view and share photos, and even create their own albums right on the Thecus IP storage.

You will see your own Photo Gallery and all public Photo Albums on the network.

To manage any picture files, you must first select the item by clicking the box then enter user name and password to login photo server.



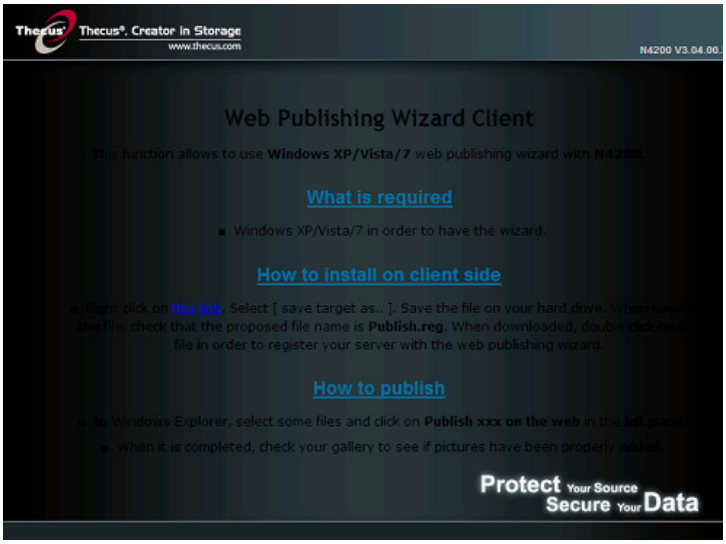


Windows XP Publishing Wizard

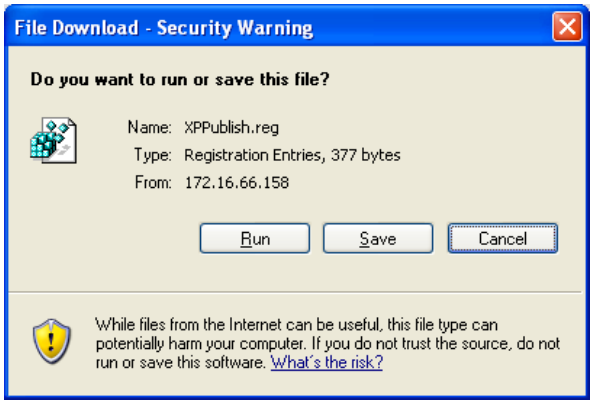
There are many ways for a local user to upload pictures into their photo album. Users of Windows XP can upload their pictures using the Windows XP Publishing Wizard.

1. Click on the ***XP Publishing Wizard*** icon on top right corner.

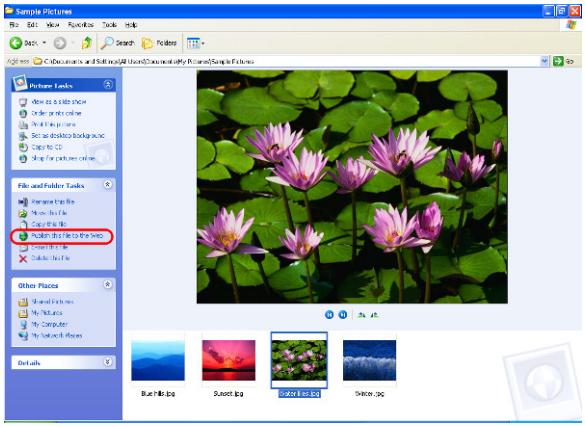
2. The **XP Web Publishing Wizard Client** screen appears. Click on the link to install the Publishing Wizard.



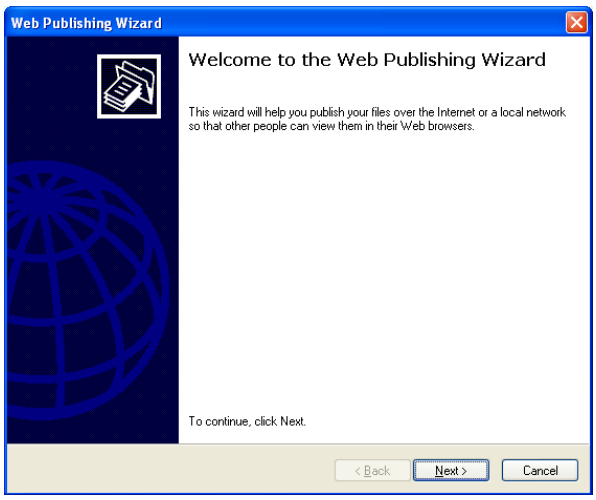
3. Windows XP will ask whether you want to run or save this file. Click **Save** to save the register file.


File Download - Security Warning
Do you want to run or save this file?
Name: XPPublish.reg
Type: Registration Entries, 377 bytes
From: 172.16.66.158
Run
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

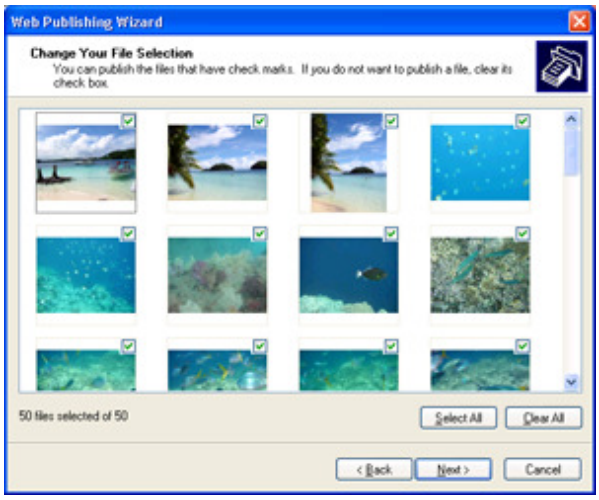
4. Once the register file is installed, use the Windows file manager to browse the folder that contains the picture you want to publish. On the left pane, there will be an icon labeled "**Publish this folder to the Web**".



5. Click on this icon and **Web Publishing Wizard** will start.


Web Publishing Wizard
Welcome to the Web Publishing Wizard
This wizard will help you publish your files over the Internet or a local network so that other people can view them in their Web browsers.
To continue, click Next.
< Back
Next >
Cancel

6. Select the pictures you want to publish to the Photo Web Server by placing a check mark on the top left hand corner of the picture. Click ***Next***.


Web Publishing Wizard
Change Your File Selection
You can publish the files that have check marks. If you do not want to publish a file, clear its check box.
50 files selected of 50
Select All
Clear All
< Back
Next >
Cancel

7. Your PC will start to connect to the Photo Web Server.

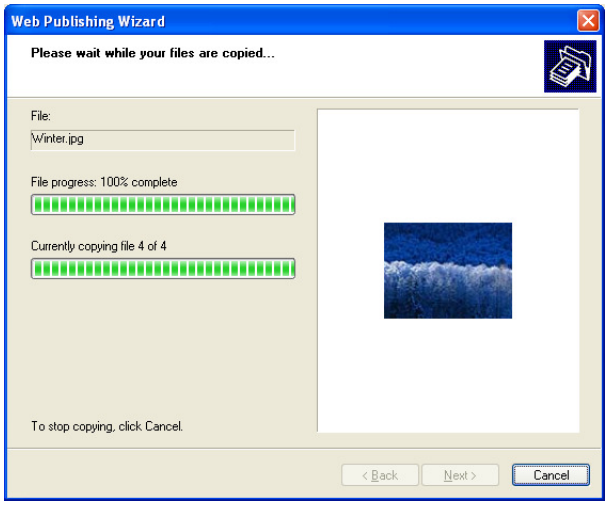
8. Select **Thecus IP storage Photo Gallery Wizard** to publish your pictures to Thecus IP storage.

9. Login into the Thecus IP storage with your local user name and password.

10. Create your album by entering an album name and clicking on the **Create Album** button.

11. Select the album you want to upload your pictures to.
12. Confirm the target album.

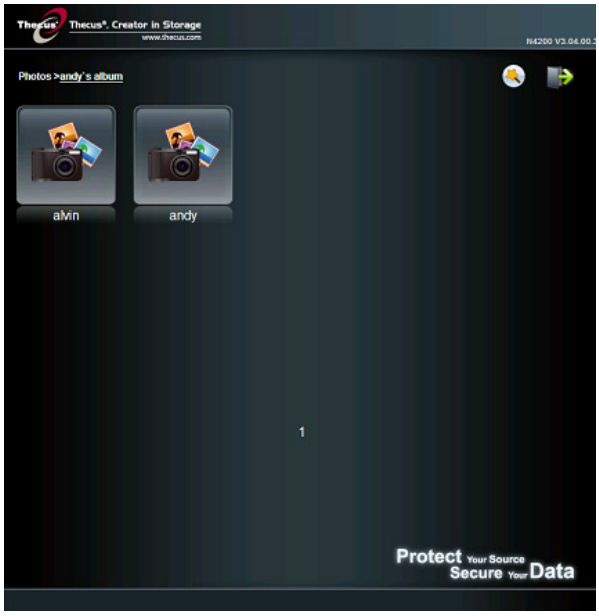
13. Windows will show you that the picture upload is in progress.



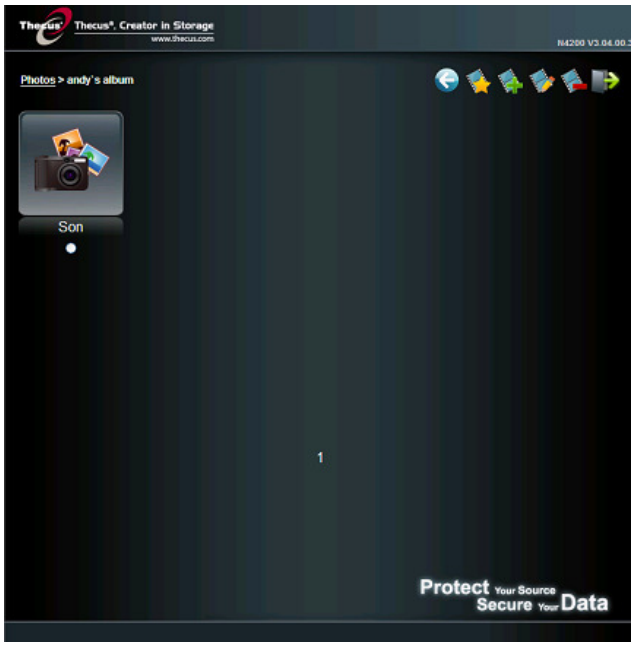
14. When the upload is finished, the Wizard will ask you whether if you want to go to the website. Click ***Finish*** to go to your Photo Web Server.

Web Publishing Wizard
Completing the Web Publishing Wizard
You have successfully published your files to this site:
N5500 Photo Gallery
Open this site when I click Finish.
To close this wizard, click Finish.
< Back
Finish
Cancel

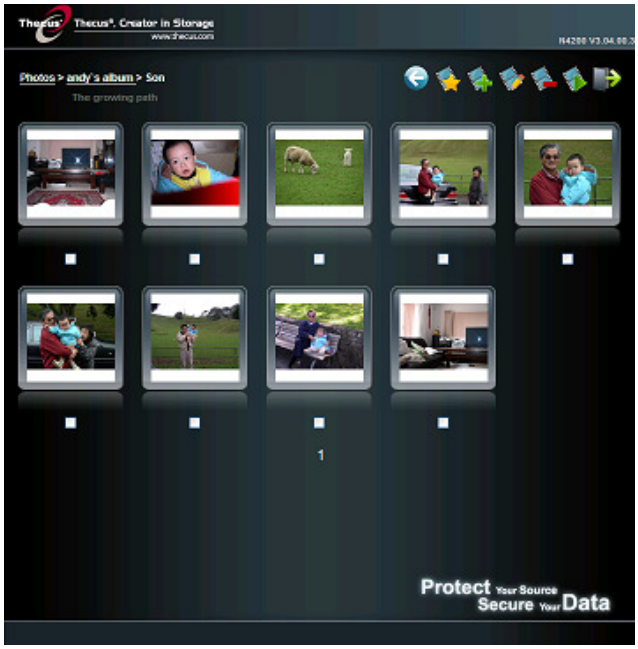
15. Click on the user's icon to go to that user's album.



16. You will see the user's album list. Click on **Album**.



17. Finished! You will see the pictures just selected in the album.



Managing Albums and Photos

Icon	Function	Description
	Make Cover	Make selected photo your cover picture.
	Back	Return to the previous screen.
	Add	Add a new album or photos.
	Modify	Edit the name and description of the selected album or photo. Each name is limited to 20 characters and each description is limited to 255 characters.
	Delete	Delete the selected albums or photos.

NOTE

- Only logged in users will see these icons.
- To prevent system errors, the Thecus IP storage sets the following limitations on photo files:
- Each file upload is limited to a size of 8MB. Files exceeding 8MB will NOT be uploaded and no error message will appear.
- Only these photo file types will be uploaded: *.jpg, *.gif, *.bmp, *.png, *.pcx, *.psd, *.bmp.
- If duplicate file names exist during upload process, system will add a number in front of the original file name (abc → 1abc).

Creating Albums

To create a photo album, follow the steps below:

1. Click the ***Add*** button to create a new album.

2. Enter a name for the album, and enter a description if you wish. Then, click on the ***Create Album*** button.

Password Protecting Albums

If you would like to put a password on a particular album, follow these steps:

1. Select the album to be protected, click on the ***Edit*** button, and the **Album Edit** screen will appear.

2. The owner of the album can enter an album password to protect the album, so that only people with the correct password can view the album.

Uploading Pictures to Albums

Uploading pictures to albums using the Web User Interface is easy:

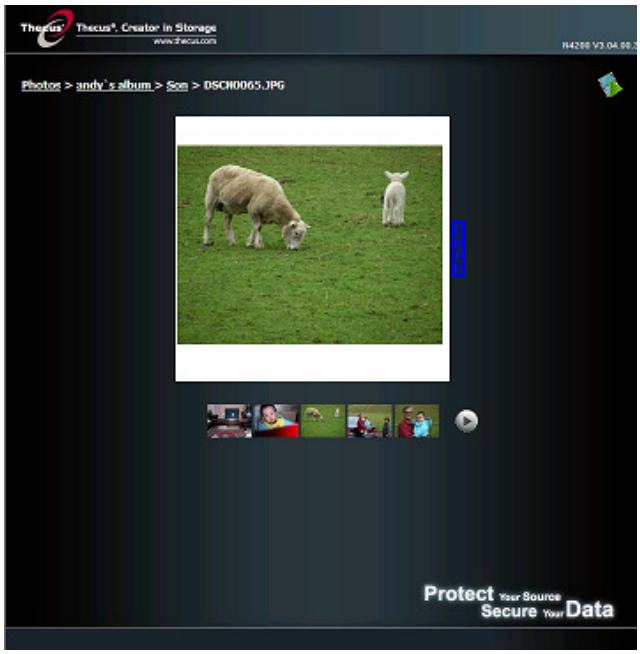
1. When the album is created, click the album icon to enter the album. Initially the album is empty.

2. Click the ***Add*** button to upload pictures into the album. The **Upload Photos** screen will appear. Users can select and upload up to 8 pictures at a time.

3. Once the picture is uploaded, you can view it in the album. The owner of the album can delete or modify the pictures with the ***Delete*** or ***Modify*** buttons on the top right hand corner

EXIF Information

While viewing pictures, you can also have the Thecus IP storage display the EXIF information for each photo.

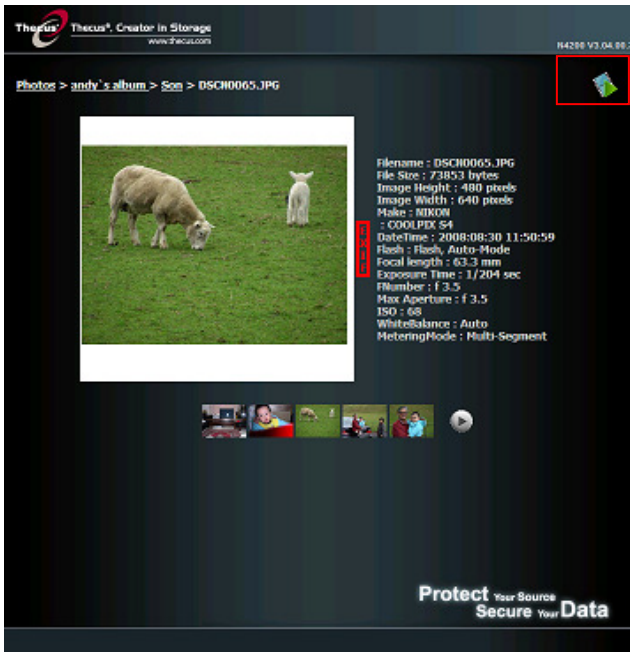


Simply click the ***EXIF*** button to display EXIF information. To hide this information, click the ***EXIF*** button again.

Slide Shows

Slide shows are a great way to enjoy pictures stored on your Thecus IP storage.

You can click on the ***Start Slide Show*** icon on the top right hand corner to start the slide show.


Photos > andy`s album > Son > DSCH0065.JPG
Filename : DSCH0065.JPG
File Size : 73853 bytes
Image Height : 480 pixels
Image Width : 640 pixels
Make : NIKON
: COOLPIX S4
DateTime : 2008:08:30 11:50:59
Flash : Flash, Auto-Mode
Focal length : 63.3 mm
Exposure Time : 1/204 sec
FNumber : f 3.5
Max Aperture : f 3.5
ISO : 68
WhiteBalance : Auto
MeteringMode : Multi-Segment
Protect Your Source
Secure Your Data

To stop the slide show, click on the ***Stop Slide Show*** icon on the top right hand corner.

Mapping a Client PC to the Thecus IP Storage

You can map share folders on Thecus IP storage so that you can access them as if they were drives on your computer. You can connect to the shared network folders on the Thecus IP storage as follows:

Windows

1. Go to the **My Computer** folder in Windows.
2. In the menu bar, select ***Tools*** and then ***Map Network Drive…***
3. The **Map Network Drive** window appears.
4. Assign a drive letter for the share folder.
5. Click the ***Browse*** button to find the folder over your network. Alternatively, you may enter the folder name you wish to connect to or enter its IP address. (i.e. `\\192.168.1.100\share`)
6. Click ***Finish***. When the **Connect As…** window appears, enter your user name and password.
7. Click ***OK***. The share folder appears as the drive you assigned. You can now access this folder as though it were a drive on your computer.

Apple OS X

On an Apple computer, you can connect to shared computers and servers using a network address.

1. Choose ***Go*** > ***Connect to Server...***

2. Enter the network address for the server in the Server Address text box.
   When connecting using SMB/CIFS protocol, type:
   `smb://192.168.1.100/Folder1`
   When connecting using AFP protocol, type:
   `afp://192.168.1.100/Folder1`
   Click ***Connect***.

3. When MAC OS X is trying to connect Thecus IP storage, it will ask for a User Name and Password which has access to the folder.

4. When MAC OS X has connected to Thecus IP storage successfully, an icon representing the folder will appear on the MAC OS X desktop. You can access the folder by double clicking on the icon.

Chapter 6: Tips and Tricks

USB Storage Expansion

The Thecus IP storage supports external USB hard disks through its USB ports. Once a USB hard disk has successfully mounted, the entire volume will be linked automatically to the default USB HDD folder.

Before attaching a USB disk drive to a Thecus NAS, it must be partitioned and formatted by a computer. The attached device will be located at \\IPADDRESS\usbhdd\usb\xxx\ where IPADDRESS is the IP address of the NAS (192.168.1.100 by default) and xxx is the name of the folder on the NAS (usually labelled 1, 2, 3, etc in succession for each time data is imported).

NOTE

USB Storage	FAT32 Partition	NTFS Partition
Read	OK	OK
Write	OK	OK

Replacing Damaged Hard Drives

If you are using RAID 1, you can easily replace a damaged hard drive in the Thecus IP Storage while keeping your data secure with the system's automatic data recovery.

Hard Drive Damage

When a hard drive is damaged and data in the RAID volume, the system LCD (LED-N0204) will display warning message and begin beeping.

Replacing a Hard Drive

To replace a hard disk drive in the Thecus IP storage:

1. Open front door of the Thecus IP storage.

2. For 3.5" HDDs (N2200/N2200PLUS/EVO,N4100EVO)
   a. Remove the HDD tray
   b. Get the HDD tray, remove failed hard disk(s) and install new hard disk(s).
   c. Slide hard disks into the Thecus IP storage until they snap into place.

3. For 2.5" HDDs (N0204/N2200/N2200PLUS/EVO,N4100EVO)
   a. Remove the 2.5" HDD tray
   b. Remove failure hard disk
   c. Install new HDD on to the hard HDD tray
   d. Slide into HDD tray till it snap into place.

RAID Auto-Rebuild

When using RAID 1 on the Thecus IP storage, you can use the auto-rebuild function when an error is detected.

1. When a hard disk fails the system beeps and/or an email notification is sent to specified recipients.

2. Check the LCD (LED) to see which disk has failed.

3. Follow the steps mentioned above to replace the failed hard disk.

4. The system automatically recognizes the new hard disk and starts the auto-rebuild sequence to resume its status before the hard disk crash.

Chapter 7: Troubleshooting

Forgot My Network IP Address

If you forget your network IP address and have no physical access to the system, please using the smart utility or setup wizard to retrieve the IP of your Thecus IP storage.

1. Start the Setup Wizard (Smart Utility) , and it will automatically detect all Thecus IP storage products on your network.

2. You should be able to find the IP address of Thecus IP storage which you have forgotten in the **Device Discovery** screen.

Resetting NAS IP Address and Admin Password (N2200/N2200PLUS/EVO)

In case you changed the Thecus IP storage IP address and then forgot it, or forgot the administration password, follow the steps below to reset to default settings:

1. Power on the Thecus IP storage and immediately press the ***Reset*** button for 30-50 seconds. (The reset button is near the "DC IN" connector)

2. This resets the Thecus IP storage to its default IP address and password settings.

   Default IP: `192.168.1.100`
   Default admin password: `admin`

Can't Map a Network Drive in Windows XP

You may have problems mapping a network drive under the following conditions:

1. The network folder is currently mapped using a different user name and password. To connect using a different user name and password, first disconnect any existing mappings to this network share.

2. The mapped network drive could not be created because the following error has occurred: **Multiple connections to a server or shared resource by the same user, using more than one user name, are not allowed.** Disconnect all previous connections to the server or shared resource and try again.

To check out existing network connections, type `net use` under the DOS prompt. You may refer the URL below for more network mapping information.

http://esupport.thecus.com/support/index.php?_m=downloads&_a=viewdownload&downloaditemid=57&nav=0

Restoring Factory Defaults

From the **System** menu, choose the ***Factory Default*** item and **the Reset to Factory Default** screen appears. Press ***Apply*** to reset Thecus IP storage factory default settings.

WARNING

Resetting to factory defaults will not erase the data stored in the hard disks, but WILL revert all the settings to the factory default values.

Problems with Time and Date Settings

The administrator is able to select an NTP Server to keep Thecus IP storage time synchronized. However, if Thecus IP storage can not access the Internet, you may encounter a problem when setting the Time and Time Zone. If this happens:

1. Login to the Web Administration Interface.
2. Navigate to **System Management>*Time***.
3. Under **NTP Server**, select ***No***.
4. Set the **Date**, **Time**, and **Time Zone**.
5. Click ***Apply***.

In addition, if Thecus IP storage is able to access the Internet and you want to keep the NTP Server clock.isc.org by default, please make sure the DNS Server is correctly entered, thereby allowing the NTP Server name to correctly resolve. (See **System *Network*** > ***WAN/LAN1*** > ***DNS Server***)

Appendix A: Customer Support

If your Thecus IP storage is not working properly, we encourage you to check out **Chapter 7: Troubleshooting**, located in this manual. You can also try to ensure that you are using the latest firmware version for your Thecus IP storage. Thecus is committed to providing free firmware upgrades to our customers. Our newest firmware is available on our Download Center:

http://www.thecus.com/download.php

If you are still experiencing problems with your Thecus IP storage, or require a Return Merchandise Authorization (RMA), feel free to contact technical support via our Technical Support Website:

http://www.thecus.com/support_tech.php

Customers in the US should send all technical support enquiries to the US contact window included in the following web page:

http://www.thecus.com/support_tech.php

For Sales Information you can e-mail us at:

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Thank you for choosing Thecus!

Appendix B: RAID Basics

Overview

A Redundant Array of Independent Disks (RAID) is an array of several hard disks that provide data security and high performance. A RAID system accesses several hard disks simultaneously, which improves I/O performance over a single hard disk. Data security is enhanced by a RAID, since data loss due to a hard disk failure is minimized by regenerating redundant data from the other RAID hard disks.

Benefits

RAID improves I/O performance, and increases data security through fault tolerance and redundant data storage.

Improved Performance

RAID provides access to several hard disk drives simultaneously, which greatly increases I/O performance.

Data Security

Hard disk drive failure unfortunately is a common occurrence. A RAID helps prevent against the loss of data due to hard disk failure. A RAID offers additional hard disk drives that can avert data loss from a hard disk drive failure. If a hard drive fails, the RAID volume can regenerate data from the data and parity stored on its other hard disk drives.

RAID Levels

The Thecus IP storage supports standard RAID levels 0, 1,5 and JBOD(depended on modle). You choose a RAID level when you create a system volume. The factors for selecting a RAID level are:

- Your requirements for performance
- Your need for data security
- Number of hard disk drives in the system, capacity of hard disk drives in the system

The following is a description of each RAID level:

RAID 0

RAID 0 is best suited for applications that need high bandwidth but do not require a high level of data security. The RAID 0 level provides the best performance of all the RAID levels, but it does not provide data redundancy.

RAID 0 uses disk striping and breaking up data into blocks to write across all hard drives in the volume. The system can then use multiple hard drives for faster read and write. The stripe size parameter that was set when the RAID was created determines the size of each block. No parity calculations complicate the write operation.

RAID 1

RAID 1 mirrors all data from one hard disk drive to a second one hard disk drive, thus providing complete data redundancy. However, the cost of data storage capacity is doubled.

This is excellent for complete data security.

RAID 5

RAID 5 offers data security and it is best suited for networks that perform many small I/O transactions at the same time, as well as applications that require data security such as office automation and online customer service. Use it also for applications with high read requests but low write requests.

RAID 5 includes disk striping at the byte level and parity information is written to several hard disk drives. If a hard disk fails the system uses parity stored on each of the other hard disks to recreate all missing information.

JBOD

Although a concatenation of disks (also called JBOD, or "Just a Bunch of Disks") is not one of the numbered RAID levels, it is a popular method for combining multiple physical disk drives into a single virtual one. As the name implies, disks are merely concatenated together, end to beginning, so they appear to be a single large disk.

As the data on JBOD is not protected, one drive failure could result total data loss.

Stripe Size

The length of the data segments being written across multiple hard disks. Data is written in stripes across the multiple hard disks of a RAID. Since multiple disks are accessed at the same time, disk striping enhances performance. The stripes can vary in size.

Disk Usage

When 2 or 4 disks are of the same size, and used in RAID, Thecus IP storage disk usage percentage is listed below:

RAID Level	**Percentage Used**
RAID 0	100%
RAID 1	1/n x 100%
RAID 5	(n-1)/n x 100%
JBOD	100%

n： number of installed HDDs

Appendix C: Licensing Information

Overview

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